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Aspen Community Types on the Caribou and Targhee National Forests in Southeastern Idaho

Walter F. Mueggler and Robert B. Campbell, Jr.

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RESEARCH SUMMARY

A classification system is presented for aspen- *(Populus tremuloides-)* dominated forests on the Caribou and Targhee National Forests in southeastern Idaho. Twenty-three aspen community types are defined and described. A diagnostic key utilizing indicator plant species is provided for field identification of the community types. Vegetational composition, productivity, and successional status are discussed. Tables are provided for detailed comparisons.

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INTRODUCTION

Aspen (*Populus tremuloides* Michx.) forests within the Intermountain Region span a broad environmental range compared to other major vegetational types. Aspen can be found associated with such divergent types as moist *Picea-Abies* forests and relatively dry *Artemisia*-grass steppes. Within the region it occurs at elevations ranging from 5,000 to 11,000 ft (1 525 to 3 350 m), and on all topographic exposures. In addition, aspen is regarded as both a seral dominant and climax dominant tree, but its successional status on a specific area is often uncertain (Mueggler 1976). The diverse environment suitable for the growth of aspen results in considerable variation in composition of undergrowth vegetation, its productivity, and the potential of aspen communities to produce forage, wildlife habitat, and wood products.

Intensive multiple-use management for the resources produced by aspenlands requires that we be able to categorize the land units according to their potential productivity and probable response to management. Recognition of the need for such wildland classifications has prompted the current thrust in habitat type classification in the West (Pfister 1976). Habitat types are aggregations of land units capable of supporting similar climax plant communities and are based upon species composition of the climax community. Such a classification has recently been completed for the forests of eastern Idaho and western Wyoming (Steele and others, in press), which covers the Caribou and Targhee National Forests. Aspenlands, however, were not treated in detail in this habitat type classification because aspen was primarily considered to be either seral to conifers, or persistently seral with unknown climax potential. Steele and others (in press) did recognize climax aspen communities below the lower limits of conifers in the *Artemisia tridentata* zone, but did not describe these in detail.

The uncertain successional status of many aspen communities renders the habitat-type approach to classifying these communities infeasible at present. A community-type approach, however, is appropriate because it avoids the presumption of climax. Community types are aggregations of similar plant communities based upon existing floristic composition regardless of successional status. Both of these approaches to classification view the plant community as an environmental integrator. Community types may be either climax types or seral types leading to one or more climax types. This existing vegetation is usually what the resource manager must contend with in the field. Once community types are defined, effort can be directed toward linking these types to known habitat types for a better understanding of the successional process. Meanwhile, the community types can be used as a basis for mapping and resource management planning.

An aspen community type classification was recently developed for the Bridger-Teton National Forest in western Wyoming (Youngblood and Mueggler 1981). This classification described 26 community types, of which three were considered climax community types, that is, stable communities representing habitat types. Sixteen were considered seral to climax community types dominated by conifers, and the stability of seven of the types was uncertain. The Caribou and Targhee National Forests border the Bridger-Teton National Forest on the west, and thus were natural candidates for extending the aspen classification work. All three Forests contain sizable acreages of aspen communities intermingled with other vegetation types. The Forests occur mainly within the Middle Rocky Mountain physiographic province (Fenneman 1931), which appears to be a zone of transition for aspen from the sporadic occurrence of small groves in the Northern Rocky Mountains to the extensive stands of aspen in the Colorado Plateau and Southern Rocky Mountain provinces (Mueggler, in press).

The Caribou and Targhee National Forests consist primarily of a sequence of northerly trending mountain ranges (fig. 1); the exceptions to this are the Centennial Range, with an east-west orientation along the northern part of the Targhee Forest and the Yellowstone Plateau. Elevations range from approximately 5,000 ft (1 525 m) along the edge of the Snake River Plains to over 12,000 ft (3 650 m) in the Teton Range. Within this elevational spread, major vegetation zones range from the *Artemisia* steppes on the plains and semiarid portions of lower mountains, through the *Pseudotsuga* and *Abies* coniferous forest zones, to alpine tundra on the highest peaks. Aspen communities are most abundant in this area at elevations between 6,000 and 7,500 ft (1 830 and 2 290 m).

Both the small groves and larger stands of aspen located adjacent to and scattered throughout the predominantly coniferous forests are important components of the vegetational complex of these two National Forests. Aspen-dominated communities are regarded as highly desirable multiple-use areas. They not only provide abundant livestock forage and important habitat for many forms of wildlife, but are esthetically pleasing, offer good watershed protection, and are a potential source of wood fiber.

Our objective was to develop a classification, based upon existing vegetation, for partitioning the natural variability among aspen communities on the Caribou and Targhee Forests. It is hoped that this classification will serve as a tool for improved multiple-use planning and management on these Forests.

METHODS

Species composition data from a large number of aspen stands spanning the environmental range of aspen on the two Forests were required to develop the community type classification. In addition, relatively detailed and time-consuming plot samples were needed to describe productivity, stand structure, and some of the environmental features. We did not have the capability to sample all stands in detail and still obtain sufficient numbers from which to structure a representative classification. Therefore, a dual sampling approach was used; reconnaissance plots were sampled rapidly by one person traveling independently from a two-person crew that sampled the more time-consuming intensive plots. The reconnaissance plots were designed to obtain estimates of species composition along with the more easily obtained environmental parameters. The intensive plots were designed to yield data on stand structure, age, productivity, and environment as well as species composition.

Field Methods

The selection of a stand for sampling, although subjective, was without conscious bias. The selection criteria were to sample the full environmental range of aspen and to sample only stands that were sufficiently large to contain the sample plot within an apparently uniform environment. A stand was considered for sampling if at least 50 percent of the tree canopy cover consisted of aspen. Neither apparent successional status nor grazing intensity were considerations in stand selection. In most cases, locating stands involved traveling forest roads to find reasonably accessable candidate stands.

Once a stand was selected for intensive sampling, a single 1/13-acre (1/32-ha) circular macroplot was established in a relatively uniform and representative portion of the stand. Clonal ecotones were avoided where a stand consisted of more than a single aspen clone, as were the ecotones occurring at stand margins and atypical openings. Tree data determined by species on the entire macroplot consisted of: an ocular estimate of overhead canopy cover; reproduction as number of stems less than 4.0 inches (1 dm), 4.0 to 11.9 inches (1 to 3 dm), and 12 to 55 inches (3 to 14 dm) high; number of stems by 2-inch (5-cm) d.b.h. size classes; and age, height, and diameter of individual trees selected to represent the dominant and other well-defined strata. Species composition of the undergrowth shrubs and herbs was determined by estimates of canopy-cover classes based upon careful overall scrutiny of the entire macroplot. In addition, canopy cover of shrubs, graminoids, forbs, and annuals were estimated separately as vegetational classes. Undergrowth biomass was determined by a combination of estimating and clipping current year's growth of shrubs (below 5 ft [1.5 m] high) and herbs on three sets of plots randomly distributed on the 1/13-acre (1/32-ha) macroplot. Each set of plots consisted of a cluster of five circular 5.4-ft^2 (1/2-m^2) microplots on which the current growth on four was estimated as a percentage of the fifth, which was then clipped. The clipped material was saved and later dried for 48 hours at 158° F (70° C). All production values given are dry weights. Production, therefore, was based on 15 microplots per stand. An estimated correction was applied at the time of sampling to adjust for sampling either earlier or later than peak standing crop, as well as to compensate for obvious utilization by livestock. The proportion of the current growth consisting of the different vegetation classes was estimated. The following environmental parameters were determined for each intensively sampled stand: elevation, aspect, percent slope, land form, soil parent material, depth of melanized layer, and estimates of rooting depth, soil rockiness, and soil texture. Evidence of succession, livestock use, and other interpretive information were recorded. A total of 114 stands scattered across the Caribou and Targhee National Forests were sampled in this manner.

The relatively rapid reconnaissance technique involved choosing an approximately 1/10-acre (1/25-ha) portion of the selected stand, avoiding apparent ecotones, and by carefully scrutinizing the area, ocularly estimating the percentage canopy cover of each species as well as that of total shrub, graminoid, and forb classes. Canopy cover of trees was estimated separately for that portion under 5 ft (1.5 m) high (reproduction) and that portion over this height. The environmental parameters of elevation, aspect, landform, and soil parent material were recorded, and interpretive information related to apparent succession and animal use was noted. A total of 211 stands were sampled by this method on the two National Forests.

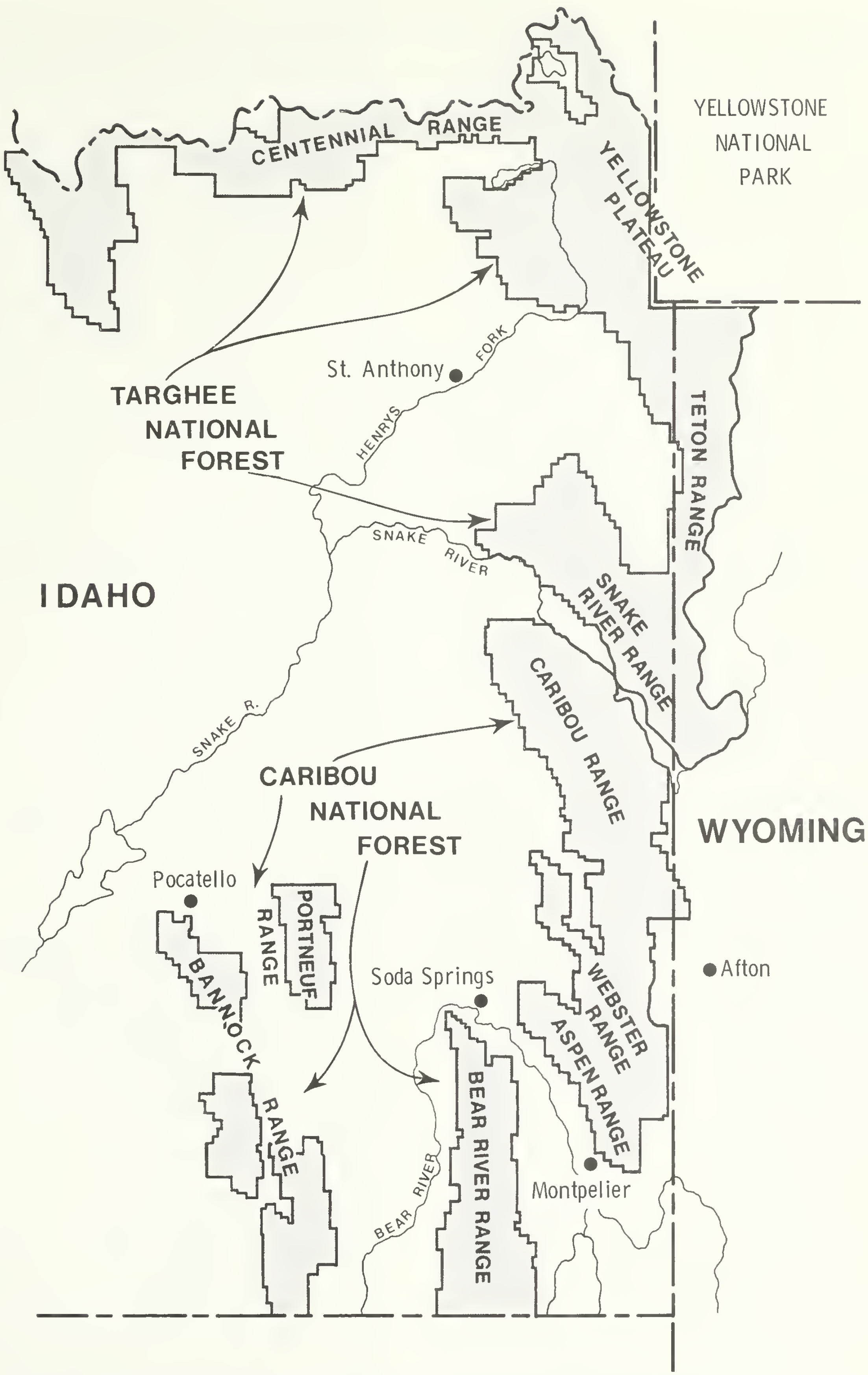

Figure 1.—The Targhee and Caribou National Forests in southeastern Idaho covered by this classification, including the locations of the main mountain ranges.

Data Analysis

Species composition data from the total 325 stands were used to develop the community type classification. Analyses of these data took two main forms.[1] First, similarity between stands was computed using species canopy cover and Sorensen's community coefficient (Gauch and Whittaker 1972, Mueller-Dombois and Ellenberg 1974). A minimum canopy cover value of 3 percent qualified a species for inclusion in comparisons; aspen was the only species arbitrarily excluded from the comparisons since its presence was a criterion for stand selection. The minimum value constraint was imposed to eliminate those species contributing very little to community composition. Similarity index values can range from 0.00 to 1.00, with the latter indicating identical species having identical canopy cover in compared stands. Of the 31,375 comparisons, only 8.9 percent had values exceeding 0.50 and only 1.5 percent had values exceeding 0.66. Cluster analyses of the similarity indices, using the unweighted-pair-group method with arithmetic averages (Sokal and Sneath 1964; Marshal and Romesburg 1977), permitted initial groupings which gave insights to community relationships. This objective, numerical taxonomic approach, however, did not by itself result in community groupings sensible for management. We believe that the relatively few species exerting a dominant role, as expressed by a combination of life form and amount of canopy cover, should be stressed in the development of a meaningful classification. The importance of these species appeared to be overshadowed by the great variation in presence and cover of relatively minor species in the computation of the similarity indices.

The second form of analysis, the synthesis or association table method (Mueller-Dombois and Ellenberg 1974), permitted subjective recognition of similarities in vegetational structure in species fidelity, constancy, and coverage. Numerous reiterations of stand alignments permitted sequencing the stands according to visual similarities of occurrence and structural dominance of what we consider important species indicative of environment, grazing degradation, and management concern.

The stands were subsequently grouped into community types according to the constancy and dominance of the selected indicator species. Vegetational structure was a prime consideration in forming the groups. The presence or absence of substantial amounts of conifers in the overstory, or potentially so as judged by regeneration, was the first separation element. The presence of conifers was considered highly relevant because of successional implications. Those stands containing substantial amounts of conifers were categorized as aspen-conifer cover types, which were then further partitioned into community types. Given sufficient time, all such mixed cover types will probably succeed to coniferous forest climax communities in the normal course of succession. The presence or absence of a tall shrub layer and of a low shrub layer were the second and third elements considered in grouping stands. These shrub layers not only tend to reflect environmental differences but are also highly relevant to management. The prevalent or indicator species in the herb layer was the fourth element. Thus, species prevalence within the tree, tall shrub, low shrub, and herb life form classes were used to delineate and characterize the aspen community types. The resulting community type nomenclature consists of binomial and trinomial names based upon the primary trees, shrubs, and herbs used in the separations.

Following the grouping of stands into community types, a dichotomous key was prepared based upon characterizing species and checked against all stands. This key will facilitate field identification of the community types. The key is usable with a knowledge of five trees, seven shrubs, four graminoids, and five forbs.

The constancy of occurrence of species in stands within a community type and its average canopy cover was computed for the more important species. These values are summarized in appendix A for ready comparison of species composition in the different community types.

The basal area and site index of *Populus tremuloides* are summarized by community types in appendix B. Eighty-year site index was computed for each of the intensively sampled stands using Jones' (1967) site index curves for aspen.

Undergrowth production, composition by vegetational classes, and forage suitability are summarized in appendix C. An approximation of suitability as livestock forage was derived from our species composition data based upon canopy cover, and from species palatability ratings developed for the Intermountain Region by USDA Forest Service (1969). The proportion of the summed canopy cover comprised of species falling into each of three desirability classes (desirable, intermediate, least) is considered an index to the value of the undergrowth as livestock forage.

Special Considerations

A word of explanation regarding our concept of plant community organization might add perspective to the development of the classification and its potential use. Seldom, if ever, do plant communities fall into clearcut taxonomic units. This is because no two plant communities are identical; species composition differs from place to place because of environmental and successional gradients as well as because of chance. Even where environmental stability and lack of physical disturbance have permitted the development of climax communities, subtle environmental differences from place to place and the factor of chance contribute to certain differences in the kinds and amounts of species comprising each community. Such differences in species composition are even more pronounced in seral vegetation which reflect in addition the variable effects of past and current disturbance. Vegetation classification, therefore, becomes a matter of arbitrarily deciding upon the amount of variability in composition tolerable in the taxonomic unit. This vegetation variability in turn reflects the amount of environmental and successional variability acceptable in defining the units. The amount of variability acceptable should be determined by the need for and projected use of the resulting classification.

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[1] The assistance of R. L. Mauk, Utah State University, in the use of computer programs (MATRIX, ASSTAB, CONCOV) developed by him is gratefully acknowledged.

Nomenclature of most plant species follows Hitchcock and others (1955-69), except in a few instances where Harrington (1954) is appropriate. Field identification of certain rather common species presented problems that were resolved by combining species. Positive separation of *Thalictrum occidentalis* and *Thalictrum fendleri* is very difficult without mature achenes; these two species are treated as *T. fendleri* since it is probably more common in the area. *Osmorhiza depauperata* and *Osmorhiza chilensis* are also difficult to separate without mature fruits and often occupy similar sites; they are combined as *O. chilensis.* Similarly, *Rosa nutkana* and *Rosa woodsii* are combined as *R. woodsii* since they are difficult to separate without flowers and apparently also hybridize. Field separation of *Arnica latifolia* and *Arnica cordifolia* can also be difficult at times; these two species are therefore combined as *A. cordifolia,* which tends to occupy the drier forested sites and was encountered most frequently. *Symphoricarpos albus* and *Symphoricarpos oreophilus* are difficult to separate unless one notes the small hollow hole in the pith of *S. albus* and the tendency of the nonrhizomatous *S. oreophilus* to occur in clumps. Steele and others (in press) indicate that *S. albus* tends to occupy terraces, moist areas, and fine textured soils, whereas *S. oreophilus* is more widespread and abundant on drier rocky sites. Youngblood and Mueggler (1981) observed that *S. albus* was confined to northwestern Wyoming whereas *S. oreophilus* occurred throughout western Wyoming. We observed that *S. albus* was fairly well confined to the northern portion of eastern Idaho where both species frequently occupied the same site. Valid taxonomic separation of *Geranium fremontii* is questionable. This confusion is reflected by different floras which seldom treat both species. In Utah and Colorado the pink flowered *Geranium* with a nonglandular base is commonly called *G. fremontii,* whereas in Idaho and western Wyoming it is referred to as *G. viscosissimum* var. *nervosum*. We have chosen to use the *G. viscosissimum* name for this uncertain complex.

Community type classifications are intrinsically weak in ability to communicate information on successional status. Such classifications are based on **existing** floristics, which may be appreciably altered from climax. Whether a named type is seral or stable can have pronounced management implications. We have attempted to clarify the successional status of our aspen community types by linking them to Steele and others' (in press) coniferous forest habitat type classification, where appropriate, and to other community types in our classifications. This was done primarily by comparing species composition and environments in the context of probable changes caused by disturbance. At best, the linkages are only suggestive and will require intensive separate study for confirmation of the successional relationships.

COMMUNITY TYPES

This classification partitions those forest communities on the Caribou and Targhee National Forests in which aspen comprises at least 50 percent of the tree canopy into four cover types based upon the dominant overstory trees. The cover types are then separated into a total of 23 community types based upon dominant species in the undergrowth.

Cover and Undergrowth Types

Stands containing at least 5 percent canopy cover of *Abies lasiocarpa,* alone or combined with *Picea engelmannii,* are considered to be in the *Populus tremuloides-Abies lasiocarpa* cover type. Lacking this amount of the more tolerant conifers but containing at least 10 percent canopy cover of *Pseudotsuga menziesii* qualified a stand for the *P. tremuloides-P. menziesii* cover type. Lacking the above-named conifers but containing at least 10 percent canopy cover of *Pinus contorta* qualified for inclusion in the *P. tremuloides-P. contorta* cover type. Stands containing lesser amounts of conifers were relegated to the *P. tremuloides* cover type. These minimal cover requirements for conifers were subjectively judged to approximate the level required for the species to validly indicate site differences, as well as being indicative of successional trends.

The *P. tremuloides* cover type is further subdivided into three undergrowth types based upon vegetational structure. Those community types possessing a distinct tall shrub component are placed in the tall shrub undergrowth type. Those without a pronounced tall shrub layer but that possess a distinct layer of low shrubs are placed in the low shrub undergrowth type. Community types that lack a well-defined layer of shrubs are placed within the herb undergrowth type.

Community types within a cover type were partitioned on the basis of dominant species composition within the shrub and herb layers. The community type name consists of the one or two characterizing tree species in the cover type, followed by the one or two characterizing shrub species (if present), which is then followed by the characterizing forb or grass. In no case does a name exceed a trinomial of the most characteristic species.

Only six community types were identified within cover types containing conifers. The remaining 17 community types are all contained within the *Populus tremuloides* cover type. Community type categories were based upon as few as two and as many as 53 stands. Forty percent of all stands sampled fell into the following three community types: *Populus tremuloides/Amelanchier alnifolia-Symphoricarpos oreophilus* c.t.; *P. tremuloides/S. oreophilus-Calamagrostis rubescens* c.t.; *P. tremuloides/C. rubescens* c.t. A listing of all community types is given in table 1. Of the 325 stands sampled, only six could not be matched with any of the 23 community types listed.

Successional Status

The community types described by this study are classification units reflecting existing vegetation. We did not attempt to selectively sample only those communities thought to be in balance with their environment (climax communities). The community types thus represent both vegetation that is relatively stable with the environment as well as vegetation that is seral and changing to a type having considerably different composition.

Table 1.—*Aspen community types (c.t.) by cover type categories on the Caribou and Targhee National Forests*

Cover type and community type	Abbreviation
Populus tremuloides-Abies lasiocarpa cover type	
P. tremuloides-A. lasiocarpa/Symphoricarpos oreophilus c.t.	POTR-ABLA/SYOR
P. tremuloides-A. lasiocarpa/Thalictrum fendleri c.t.	POTR-ABLA/THFE
Populus tremuloides-Pseudotsuga menziesii cover type	
P. tremuloides-P. menziesii/Amelanchier alnifolia c.t.	POTR-PSME/AMAL
P. tremuloides-P. menziesii/Symphoricarpos oreophilus c.t.	POTR-PSME/SYOR
P. tremuloides-P. menziesii/Calamagrostis rubescens c.t.	POTR-PSME/CARU
Populus tremuloides-Pinus contorta cover type	
P. tremuloides-P. contorta/Calamagrostis rubescens c.t.	POTR-PICO/CARU
Populus tremuloides cover type	
(Tall Shrub undergrowth type)	
P. tremuloides/Amelanchier alnifolia-Pachistima myrsinites c.t.	POTR/AMAL-PAMY
P. tremuloides/Amelanchier alnifolia-Spiraea betulifolia c.t.	POTR/AMAL-SPBE
P. tremuloides/Amelanchier alnifolia-Symphoricarpos oreophilus c.t.	POTR/AMAL-SYOR
P. tremuloides/Amelanchier alnifolia-Calamagrostis rubescens c.t.	POTR/AMAL-CARU
(Low Shrub undergrowth type)	
P. tremuloides/Pachistima myrsinites-Calamagrostis rubescens c.t.	POTR/PAMY-CARU
P. tremuloides/Pachistima myrsinites-Geranium viscosissimum c.t.	POTR/PAMY-GEVI
P. tremuloides/Spiraea betulifolia-Calamagrostis rubescens c.t.	POTR/SPBE-CARU
P. tremuloides/Symphoricarpos oreophilus-Calamagrostis rubescens c.t.	POTR/SYOR-CARU
P. tremuloides/Symphoricarpos oreophilus-Poa pratensis c.t.	POTR/SYOR-POPR
P. tremuloides/Symphoricarpos oreophilus-Rudbeckia occidentalis c.t.	POTR/SYOR-RUOC
P. tremuloides/Artemisia tridentata-Festuca idahoensis c.t.	POTR/ARTR-FEID
(Herb undergrowth type)	
P. tremuloides/Geranium viscosissimum c.t.	POTR/GEVI
P. tremuloides/Wyethia amplexicaulis c.t.	POTR/WYAM
P. tremuloides/Calamagrostis rubescens c.t.	POTR/CARU
P. tremuloides/Calamagrostis rubescens-Poa pratensis c.t.	POTR/CARU-POPR
P. tremuloides/Poa pratensis c.t.	POTR/POPR
P. tremuloides/Rudbeckia occidentalis c.t.	POTR/RUOC

Whether a community is seral or stable can appreciably affect management decisions. It is important, therefore, to be able to judge the successional status of community types. Community stability is indicated when existing individuals are replaced by their own progeny without disturbance; thus the community is self-perpetuating. In seral communities, current populations of some species tend to be replaced by other species resulting in gradual changes in composition. Accurate determination of stability may require intensive ecological studies; however, initial judgments can be made by examining stand age structure, trends toward shade-tolerant species, and the relative abundance of species known to increase with such disturbances as abusive livestock grazing. Such indices permitted us to develop the probable successional status of each community type (table 2).

Twelve of the community types were thought to be stable and should probably be considered to represent aspen habitat types. Six others are considered seral within coniferous forest habitat types described by Steele and others (in press), and the remaining five are thought to be seral communities caused by abusive grazing in both aspen and coniferous forest habitat types. The relationship of a seral community type to a specific habitat type was judged by similarities in composition of the vegetation, by perceived alterations attributable to successionary trends, and by similarities in environment. The uncertainty of placement in a specific habitat type is caused primarily by the lack of clearly defined relationships. As Huschle and Hironaka (1980) have pointed out, however, all community types are not unique to a habitat type. It is therefore possible for a specific community type to be a seral type in more than one habitat type, or possibly seral on one site and stable on another.

Relation to Bridger-Teton Aspen Classification

A number of differences exist between the aspen community types described for the Bridger-Teton National Forest in western Wyoming (Youngblood and Mueggler 1981) and those described here for the Caribou and Targhee National Forests. These differences stem primarily from two separate causes: (1) actual vegetational differences attributable to differences in both environment and floristic geography; (2) differences in concepts used in developing the classifications regarding meaningful assemblages of species. Additionally, selection of nomenclature for similar community types has caused some minor discrepancies.

We did not encounter in southeastern Idaho 14 of the species assemblages described as community types for the Bridger-Teton National Forest (table 3). Most of the types not observed in Idaho only occurred infrequently in

Table 2.—*Probable relationships between aspen community types on the Caribou and Targhee National Forests and previously identified habitat types*

Aspen community type	Probable habitat type	Other possible habitat types
POTR-ABLA/SYOR	ABLA/CARU, CARU phase [1]	ABLA/OSCH [1]
POTR-ABLA/THFE	ABLA/OSCH, PAMY phase [1]	ABLA/THOC [1]
POTR-PSME/AMAL	PSME/SYAL [1]	PSME/OSCH [1] PSME/CARU [1]
POTR-PSME/SYOR	PSME/CARU [1]	PSME/OSCH [1] PSME/SYAL [1]
POTR-PSME/CARU	PSME/CARU [1]	(none)
POTR-PICO/CARU	ABLA/CARU [1]	PSME/CARU [1]
POTR/AMAL-PAMY	POTR/AMAL-PAMY [2]	ABLA/CARU, PAMY phase [1] PSME/CARU, PAMY phase [1]
POTR/AMAL-SPBE	POTR/AMAL-SPBE [2]	PSME/SPBE, CARU phase [1] PSME/SYAL [1]
POTR/AMAL-SYOR	POTR/AMAL-SYOR [2]	PSME/SYAL [1] ABLA/SYAL [1]
POTR/AMAL-CARU	POTR/AMAL-CARU [2]	PSME/CARU, CARU phase [1]
POTR/PAMY-CARU	POTR/PAMY-CARU [2]	PSME/CARU, PAMY phase [1] ABLA/CARU, PAMY phase [1]
POTR/PAMY-GEVI	POTR/PAMY-GEVI [2]	ABLA/OSCH, PAMY phase [1]
POTR/SPBE-CARU	POTR/SPBE-CARU [2]	PSME/SPBE, CARU phase [1] PSME/SYAL [1]
POTR/SYOR-CARU	POTR/SYOR-CARU [2]	PSME/CARU, CARU phase [1] ABLA/CARU, CARU phase [1]
POTR/SYOR-POPR	POTR/SYOR-CARU [2]	PSME/CARU, CARU phase [1] ABLA/CARU, CARU phase [1]
POTR/SYOR-RUOC	(uncertain)	ABLA/THOC [1]
POTR/ARTR-FEID	POTR/ARTR-FEID [2]	ARTR/FEID [3]
POTR/GEVI	POTR/GEVI [2]	ABLA/THOC [1]
POTR/WYAM	POTR/WYAM [2]	(none)
POTR/CARU	POTR/CARU [2]	PSME/CARU, CARU phase [1]
POTR/CARU-POPR	POTR/CARU [2]	PSME/CARU, CARU phase [1]
POTR/POPR	POTR/CARU [2]	ABLA/CARU, CARU phase [1] PSME/CARU, CARU phase [1]
POTR/RUOC	(uncertain)	ABLA/THOC [1]

[1] Habitat types in southeastern Idaho described by Steele and others (in press).

[2] Apparently stable aspen community types described in this study that should be recognized as distinct habitat types.

[3] Hironaka and Fosberg (1979).

western Wyoming. The *Populus tremuloides/Ligusticum filicinum* and *P. tremuloides/Berberis repens* community types, however, were fairly common in western Wyoming yet were not recognized in southeastern Idaho. The abundance of *L. filicinum* in the former and *B. repens* in the latter are characteristic and distinct markers for these two types. Although both of these species occur in southeastern Idaho, they seldom if ever were observed in sufficient abundance to warrant community type designation based on their relative dominance.

In developing our classification we stressed separation of species assemblages based upon what we considered were the features potentially most relevant to management. Concepts of relevancy change, and hopefully mature, with increased knowledge of vegetation diversity and perceived management needs. Overall vegetation structure received foremost consideration. As with the Bridger-Teton classification, presence of critical amounts of conifers was a primary separation feature. In contrast to the Bridger-Teton classification, however, we used critical amounts of tall shrub synusia and a low shrub synusia as second and third elements in forming the Caribou and Targhee classification. The prevalent taxon,

Table 3.—*Community types described for the Bridger-Teton National Forest (Youngblood and Mueggler 1981) are different than, equivalent to, or contained within those indicated for the Caribou and Targhee National Forests*

Aspen Community types	
Bridger-Teton N.F.	**Caribou and Targhee N.F.'s**
POTR-ABLA/PRVI	different
POTR-ABLA/LIFI	different
POTR-ABLA/PERA	different
POTR-ABLA/BERE	different
POTR-ABLA/SHCA	different
POTR-ABLA/ARCO	different
POTR-ABLA/RUOC	different
POTR-PSME/SPBE	different
POTR/RAAL	different
POTR/EQAR	different
POTR/LIFI	different
POTR/JUCO	different
POTR/BERE	different
POTR/SHCA	different
POTR/ASMI	different
POTR-PSME/SPBE	POTR-PSME/PRVI
POTR-PSME/CARU	POTR-PSME/SYOR POTR-PSME/CARU
POTR/PRVI	POTR/AMAL-SYOR POTR/AMAL-CARU
POTR/SPBE	POTR/AMAL-SPBE POTR/SPBE-CARU
POTR/SYOR	POTR/SYOR-CARU POTR/SYOR-POPR POTR/PAMY-GEVI
POTR/ARTR	POTR/ARTR-FEID
POTR/CARU	POTR/SYOR-CARU POTR/CARU POTR/CARU-POPR
POTR/ARCO	POTR/GEVI different
POTR/THFE	POTR/GEVI different
POTR/HELA	POTR/RUOC
POTR/RUOC	POTR/RUOC
POTR/WYAM	POTR/WYAM

or taxa, in the herb layer was the final element considered. Thus, a prominent community type such as POTR/CARU in the Bridger-Teton classification will be found subdivided in the Caribou and Targhee classification (table 3), depending upon the presence of critical levels of *Symphoricarpos oreophilus*. Similarly, the POTR/SYOR community type of the Bridger-Teton classification has been subdivided, depending upon prevalent indicator species in the herb layer.

The matter of nomenclature preference is illustrated by the POTR/HELA type of the Bridger-Teton classification contained within the POTR/RUOC type of the Caribou and Targhee classification (table 3). POTR/HELA appears fairly distinct on the Bridger-Teton because of the constancy of *Heracleum lanatum*; however, *Rudbeckia occidentalis* not only was equally constant but usually had greater cover. The lesser constancy and cover of *H. lanatum* in what otherwise appears to be a fairly similar assemblage of species in southeastern Idaho prompted us to label this as a POTR/RUOC community type.

Vegetation Key

Table 4 consists of a vegetational key that permits identification of the aspen community types on the Caribou and Targhee National Forests. This key should be used with caution elsewhere because it has not been tested other than on these two forests. The key utilizes canopy cover estimates of common species within the tree, shrub, and herbaceous layers. The key was designed for use on those forest stands where *Populus tremuloides* comprises at least 50 percent of the tree canopy. Minimal canopy cover percentages of characterizing species are given only as approximate guides and should not be construed as absolute separation criteria. Difficulties encountered using the key and interpreting separation criteria can usually be resolved by comparing stand values with the constancy-cover summaries for each community type given in appendix A.

Each community type is briefly described in the order listed in table 1, which approximates the order presented in the key. These descriptions contain relevant information on distribution of the type, species composition and production, probable successional status, and whether similar communities have been reported elsewhere in the literature.

Table 4.—Vegetational key to aspen community types (c.t.) on the Caribou and Targhee National Forests, where *Populus tremuloides* comprises at least 50 percent of the tree canopy

Key To Cover Types:

I. *Abies lasiocarpa* or *Picea engelmannii* common, combined overstory and reproduction at least 5% canopy cover .... *Populus tremuloides-Abies lasiocarpa* cover type (Go to A)

I. *A. lasiocarpa* and *P. engelmannii* absent, or less than 5% canopy cover II

  II. *Pseudotsuga menziesii* common, combined overstory and reproduction at least 10% canopy cover .... *Populus tremuloides-Pseudotsuga menziesii* cover type (Go to B)

  II. *P. menziesii* absent, or less than 10% cover III

III. *Pinus contorta* common, at least 10% cover..................... *Populus tremuloides-Pinus contorta* cover type (Go to C)

III. *P. contorta* less than 10% cover.......................... *Populus tremuloides* cover type (Go to D)

Key To Community Types:

A. (*Populus tremuloides-Abies lasiocarpa* cover type)

1. *Symphoricarpos albus* and/or *Symphoricarpos oreophilus* 10% or more canopy cover... *Populus tremuloides-Abies lasiocarpa/Symphoricarpos oreophilus* c.t. (p. 11)
1. *S. albus* and *S. oreophilus* less than 10% cover......... 2
    2. *Thalictrum fendleri* conspicuous; neither *Poa pratensis* nor *Rudbeckia occidentalis* abundant (less than 10% canopy cover).................. *Populus tremuloides-Abies lasiocarpa/Thalictrum fendleri* c.t. (p. 11)
    2. *P. pratensis* or *R. occidentalis* abundant 3
3. *Abies lasiocarpa* over 10% cover........................ (Undescribed community within this cover type)
3. *A. lasiocarpa* less than 10% canopy cover 4
    4. *Poa pratensis* or *Poa nervosa* at least 20% cover.................... *Populus tremuloides/Poa pratensis* c.t. (p. 20)
    4. *P. pratensis* or *P. nervosa* not abundant; *Rudbeckia occidentalis* cover 20% or greater .... *Populus tremuloides/Rudbeckia occidentalis* c.t. (p. 20)

B. (*Populus tremuloides-Pseudotsuga menziesii* cover type)

1. *Prunus virginiana* and/or *Amelanchier alnifolia* abundant, the combination usually at least 20% cover, if less, *Acer glabrum* prominent with more than 10% cover........ *Populus tremuloides-Pseudotsuga menziesii/Amelanchier alnifolia* c.t. (p. 11)
1. Combination of *P. virginiana, A. alnifolia* and *A. glabrum* less than 20% cover......... 2
    2. *Symphoricarpos albus* and/or *Symphoricarpos oreophilus* common, generally exceeding 10% canopy cover .... *Populus tremuloides-Pseudotsuga menziesii/Symphoricarpos oreophilus* c.t. (p. 12)
    2. *S. albus* and *S. oreophilus* poorly represented, usually less than 5% cover.......... 3
3. *Calamagrostis rubescens* abundant, generally exceeding 20% canopy cover .... *Populus tremuloides-Pseudotsuga menziesii/Calamagrostis rubescens* c.t. (p. 12)
3. Not as above .... (Undescribed communities within this cover type)

C. (*Populus tremuloides-Pinus contorta* cover type)

1. *Calamagrostis rubescens* conspicuous............... *Populus tremuloides-Pinus contorta/Calamagrostis rubescens* c.t. (p. 13)
1. *C. rubescens* absent......... (Undescribed communities within this cover type)

D. (*Populus tremuloides* cover type)

1. *Amelanchier alnifolia* and *Prunus virginiana* absent or scarce (less than 5% cover) . 6
1. *A. alnifolia* and/or *P. virginiana* generally exceeding 10% canopy cover 2
    2. *Pachistima myrsinites* generally exceeding 10% cover.................... *Populus tremuloides/Amelanchier alnifolia-Pachistima myrsinites* c.t. (p. 13)
    2. *P. myrsinites* absent or scarce (less than 5% cover) 3
    3. *Spiraea betulifolia* generally exceeding 10% canopy cover....................... *Populus tremuloides/Amelanchier alnifolia-Spiraea betulifolia* c.t. (p. 14)
    3. *S. betulifolia* absent or scarce (less than 5% cover)......... 4
        4. *Symphoricarpos oreophilus* and/or *Symphoricarpos albus* generally exceeding 10% cover..... *Populus tremuloides/Amelanchier alnifolia-Symphoricarpos oreophilus* c.t. (p. 14)
        4. *S. oreophilus* and *S. albus* poorly represented, less than 5% cover 5
    5. *Calamagrostis rubescens* present..................... *Populus tremuloides/Amelanchier alnifolia-Calamagrostis rubescens* c.t. (p. 15)
    5. *C. rubescens* absent......... (Undescribed communities)
        6. *Pachistima myrsinites* absent or scarce, less than 5% cover 8
        6. *P. myrsinites* usually exceeding 10% canopy cover.................... 7

Key To Community Types: (con.)

7. *Calamagrostis rubescens* abundant, generally exceeding 20% canopy cover .... *Populus tremuloides/ Pachistima myrsinites-Calamagrostis rubescens* c.t. (p. 15)

7. *C. rubescens* poorly represented, less than 10% cover . *Populus tremuloides/ Pachistima myrsinites-Geranium viscosissimum* c.t. (p. 15)

   8. *Spiraea betulifolia* abundant, generally exceeding 20% canopy cover; *Calamagrostis rubescens* prominent ..... *Populus tremuloides/ Spiraea betulifolia-Calamagrostis rubescens* c.t. (p. 16)

   8. *S. betulifolia* absent or scarce, less than 5% cover 9

9. *Artemisia tridentata* and *Festuca idahoensis* at least 5% canopy cover each ...... *Populus tremuloides/ Artemisia tridentata-Festuca idahoensis* c.t. (p. 17)

9. *A. tridentata* and *F. idahoensis* absent or less than 5% cover 10

   10. *Symphoricarpos oreophilus* and *Symphoricarpos albus* absent or scarce, less than 5% cover 14

   10. *S. oreophilus* and/or *S. albus* generally exceeding 10% canopy cover 11

11. *Calamagrostis rubescens* and/or *Carex geyeri* at least 5% and usually more than 20% canopy cover .... *Populus tremuloides/ Symphoricarpos oreophilus-Calamagrostis rubescens* c.t. (p. 16)

11. *C. rubescens* and *C. geyeri* absent or scarce, less than 5% cover 12

   12. *Rudbeckia occidentalis* at least 5% canopy cover ... *Populus tremuloides/ Symphoricarpos oreophilus-Rudbeckia occidentalis* c.t. (p. 17)

   12. *R. occidentalis* absent or scarce, less than 5% cover 13

13. *Poa pratensis* and/or *Poa nervosa* exceeding 10% cover .... *Populus tremuloides/ Symphoricarpos oreophilus-Poa pratensis* c.t. (p. 17)

13. *P. pratensis* and/or *P. nervosa* less than 10% cover......... (Undescribed communities)

   14. *Wyethia amplexicaulis* abundant at least 20% canopy cover .... *Populus tremuloides/ Wyethia amplexicaulis* c.t. (p. 18)

   14. *W. amplexicaulis* absent or scarce................... 15

15. *Calamagrostis rubescens* and *Carex geyeri* absent or scarce...................... 17

15. *C. rubescens* and/or *C. geyeri* abundant, more than 20% cover....................... 16

   16. *Poa pratensis* and/or *Poa nervosa* abundant, exceeding 20% cover..... *Populus tremuloides/ Calamagrostis rubescens-Poa pratensis* c.t. (p. 19)

   16. *P. pratensis* and *P. nervosa* if present, not exceeding 10% cover .... *Populus tremuloides/ Calamagrostis rubescens* c.t. (p. 19)

17. *Poa pratensis* and/or *Poa nervosa* abundant, often greatly exceeding 20% cover .... *Populus tremuloides/Poa pratensis* c.t. (p. 20)

17. *P. pratensis* and *P. nervosa* absent or scarce, less than 5% cover 18

   18. *Rudbeckia occidentalis* abundant, with 20% or greater canopy cover ..... *Populus tremuloides/ Rudbeckia occidentalis* c.t. (p. 20)

   18. *R. occidentalis* absent or scarce...................... 19

19. *Geranium viscosissimum* common. usually with 20% or greater cover .... *Populus tremuloides/ Geranium viscosissimum* c.t. (p. 18)

19. Not as above .... (Other undefined community types)

TYPE DESCRIPTIONS

Populus tremuloides-Abies lasiocarpa/ Symphoricarpos oreophilus Community Type (POTR-ABLA/SYOR c.t.)

This relatively minor community type was encountered primarily on the Caribou National Forest, but also on the southern portion of the Targhee National Forest. Stands sampled in this type occurred on various aspects at elevations between 6,900 and 7,600 ft (2 100 and 2 320 m).

The conspicuous presence of *Abies lasiocarpa* in the overstory and as regeneration, along with an abundance of *Symphoricarpos* spp. in the undergrowth, characterize the type (fig. 2). Other species present and usually conspicuous are *Geranium viscosissimum, Lupinus argenteus,* and *Osmorhiza chilensis.* In some stands the herbaceous layer may be dominated by *Calamagrostis rubescens;* such stands might well be considered a separate community type. The POTR-ABLA/SYOR c.t. is most likely a seral community within the *A. lasiocarpa/ C. rubescens* habitat type described by Steele and others (in press) as occurring in southeastern Idaho. It might, however, also be a seral stage in the *A. lasiocarpa/ Osmorhiza chilensis* habitat type (Steele and others, in press).

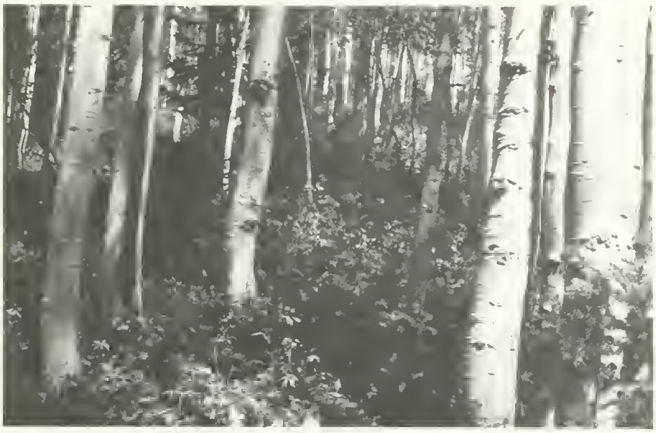

Figure 2.—A *Populus tremuloides-Abies lasiocarpa/Symphoricarpos oreophilus* community type in the Bear River Range; this community typifies seral aspen gradually being replaced by *A. lasiocarpa* in the normal course of succession.

The basal area of *Populus tremuloides* on stands sampled within this type was relatively low, averaging 111 ft^2/acre (25.5 m^2/ha). but the site index was near the average of all types, 54 ft (16.5 m) at 80 years. Most *P. tremuloides* were less than 8 inches (20 cm) d.b.h., with only a few as large as 12 inches (30 cm). *P. tremuloides* was reproducing poorly in most cases.

Undergrowth production was characteristically low within the type, averaging less than 410 dry lb/acre (460 kg/ha). Two-thirds of this production consisted of forbs, and the remainder was divided about equally between shrubs and graminoids. Over half of the canopy cover consisted of species considered desirable as livestock forage.

Youngblood and Mueggler (1981) described a *P. tremuloides-A. lasiocarpa/Berberis repens* community type in western Wyoming which is somewhat similar to our POTR-ABLA/SYOR c.t., particularly with respect to the abundance of *S. oreophilus* in the undergrowth. Usually their type also contained abundant *B. repens* and *Pachistima myrsinites* which were rather sparse in our type.

Populus tremuloides-Abies lasiocarpa/ Thalictrum fendleri Community Type (POTR-ABLA/THFE c.t.)

The POTR-ABLA/THFE c.t. appears to be a minor type that was encountered only on the Bear River and Bannock Ranges of the Caribou National Forest. The three stands sampled occurred at relatively high elevations (between 6,500 and 8,200 ft [1 980 and 2 500 m]). The lower elevation stands occurred on northeasterly exposures whereas the upper stand occupied a southwest exposure.

The vegetation in this type is characterized by conspicuous amounts of *Abies lasiocarpa* associated with *Populus tremuloides,* both in the overstory and as regeneration, and an abundance of *Thalictrum fendleri* in the undergrowth. The type differs from the POTR-ABLA/ SYOR c.t. by the lesser amount of *Symphoricarpos* spp., which may be present but not exceeding 10 percent canopy cover. Other conspicuous species in the type usually include *Geranium viscosissimum, Osmorhiza chilensis,* and *Fragaria vesca.* The POTR-ABLA/THFE c.t. is a successional stage within the *A. lasiocarpa/ O. chilensis* habitat type (Steele and others, in press).

Neither the overstory nor undergrowth productivity was measured in this type. Slightly over half of the undergrowth canopy cover, however, consisted of species considered desirable as livestock forage.

The *P. tremuloides-A. lasiocarpa/Arnica cordifolia* community type described for western Wyoming (Youngblood and Mueggler 1981) is fairly similar to this type, except it contains considerably more *A. cordifolia* and *Poa nervosa* and less *Thalictrum fendleri* than our POTR-ABLA/THFE c.t.

Populus tremuloides-Pseudotsuga menziesii/Amelanchier alnifolia Community Type (POTR-PSME/AMAL c.t.)

This community type was found primarily along the Snake River and Teton Ranges, and on the Warm River portion of the Yellowstone Plateau. The stands sampled usually occurred on fairly steep slopes (average 32 percent) on southerly exposures, ranging in elevation from approximately 5,400 to 6,700 ft (1 650 to 2 050 m).

Pseudotsuga menziesii is the primary and usually the only conifer occurring within the type. *Prunus virginiana, Amelanchier alnifolia,* and *Acer glabrum,* either alone or in combination, form a conspicuous tall shrub layer with a canopy cover frequently exceeding 25 percent. Lesser amounts of low shrubs such as *Symphoricarpos* spp., *Rosa woodsii,* and *Berberis repens* may also be present. The herbaceous layer is usually dominated by *Calamagrostis rubescens, Elymus glaucus,* and *Thalictrum fendleri,* often with appreciable amounts of *Osmorhiza chilensis, Geranium viscosissimum,* and *Aster engelmannii.* This is considered a successional stage within the *P. menziesii* conifer forest series. Judging from comparisons of species composition, it probably occurs within either the *P. menziesii/Symphoricarpos albus, P. menziesii/O. chilensis,* or *P. menziesii/C. rubescens* habitat types described by Steele and others (in press). The successional process leading to dominance by *P. menziesii* appears to be generally very slow.

P. tremuloides production appeared to be moderate in this type, with basal areas averaging 152 ft^2/acre (35 m^2/ha) and a site index at 80 years of 53 ft (16.2 m). The trees were less than 10 inches (25 cm) d.b.h., with the majority falling between 4 and 8 inches (10 and 20 cm) d.b.h. A low to moderate amount of *P. tremuloides* reproduction was present.

Production of undergrowth was moderate to high, average 1,079 dry lb/acre (1 210 kg/ha). Approximately one-third of this consisted of current-year's growth of shrubs, half forbs, the remainder graminoids. This undergrowth was considered moderately suitable as livestock forage, with 50 percent of the total canopy cover comprised of species in the desirable forage category.

Youngblood and Mueggler (1981) described a *P. tremuloides-P. menziesii/Spiraea betulifolia* community type for western Wyoming somewhat similar to this type. It, however, usually contained appreciably more *S. betulifolia* and less *T. fendleri* than our POTR-PSME/AMAL c.t.

Populus tremuloides-Pseudotsuga menziesii/Symphoricarpos oreophilus Community Type (POTR-PSME/SYOR c.t.)

The POTR-PSME/SYOR c.t. was encountered on the Bear River and Aspen Ranges on the Caribou National Forest as well as on the west face of the Teton Range on the Targhee National Forest. The sampled stands occurred primarily on northerly exposures at elevations between 6,200 and 7,500 ft (1 900 and 2 290 m). This type appears to occupy sites that generally are less steep (average of 15 percent) and more moist than those occupied by the POTR-PSME/AMAL c.t.

The type is characterized by the conspicuous presence of *Pseudotsuga menziesii* accompanying the *Populus tremuloides* (*Pinus contorta* may also be present), a well-defined low shrub layer consisting largely of *Symphoricarpos* spp., and the lack of a distinct layer of tall shrubs. *Calamagrostis rubescens, Thalictrum fendleri,* or both usually dominate the herbaceous layer. Other prominent species frequently present are *Elymus glaucus, Geranium viscosissimum, Lupinus argenteus,* and *Osmorhiza chilensis.* This type is primarily seral within the *P. menziesii* coniferous forest series; it is unclear at present whether it falls within the *P. menziesii/C. rubescens* or *P. menziesii/O. chilensis* habitat types (Steele and others, in press), or both. In some cases it appears that the successional sequence may be from *P. tremuloides* dominance, to *P. contorta,* and then to *P. menziesii* dominance, or even very slowly to dominance by *Abies lasiocarpa.*

Production of *P. tremuloides* on the sampled sites was moderately high, averaging over 161 ft^2/acre (37 m^2/ha) basal area, with a site index at 80 years of 55 ft (16.8 m). Trees over 12 inches (30 cm) d.b.h. were present, but most fell within the 6- to 10-inch (15- to 25-cm) range. Reproduction of *P. tremuloides* was generally low.

Undergrowth production was moderate (averaging slightly over 900 dry lb/acre [1 000 kg/ha]). Forbs and graminoids about equally formed the bulk of this, with shrubs averaging only 3 percent of the total. An average 54 percent of the undergrowth canopy cover consisted of desirable forage species.

A very similar *P. tremuloides-P. menziesii/C. rubescens* community type was described for western Wyoming (Youngblood and Mueggler 1981). The primary difference is that stands can be placed within our POTR-PSME/SYOR c.t. even though *C. rubescens* is sparse or lacking. Also, *S. oreophilus* dominates the low shrub layer in our type, but occasionally may be lacking in the western Wyoming type.

Populus tremuloides-Pseudotsuga menziesii/Calamagrostis rubescens Community Type (POTR-PSME/CARU c.t.)

This community type was seen only along the northern portion of the Targhee National Forest on the Centennial Range and the Yellowstone Plateau. The type occurred at moderate elevations between 6,200 and 6,900 ft (1 900 and 2 100 m), on rather gently sloping terrain, and was not confined by aspect.

The type is characterized by the obvious presence of *Pseudotsuga menziesii* associated with *Populus tremuloides* in the overstory. *Pinus contorta* may also be present. Pronounced tall shrub and low shrub layers are lacking. A few low shrubs such as *Symphoricarpos* spp. and *Berberis repens* may be present but do not form a conspicuous stratum. The undergrowth is usually dominated by *Calamagrostis rubescens* (fig. 3). Other species prominent in the type include *Thalictrum fendleri, Geranium viscosissimum, Arnica cordifolia,* and *Lupinus argenteus.* The POTR-PSME/CARU c.t. is considered a seral stage within the *P. menziesii* coniferous forest series, probably falling within the *P. menziesii/C. rubescens* habitat type described by Steele and others (in press).

Production was measured only on a single stand within the type. In this stand, *P. tremuloides* basal area and site index were moderately high, with some trees exceeding 10 inches (25 cm) d.b.h. Undergrowth production was low, less than 500 lb/acre (560 kg/ha), consisting of about one-third forbs and two-thirds graminoids. Sixty-two percent of the undergrowth canopy cover, however, consisted of desirable forage species.

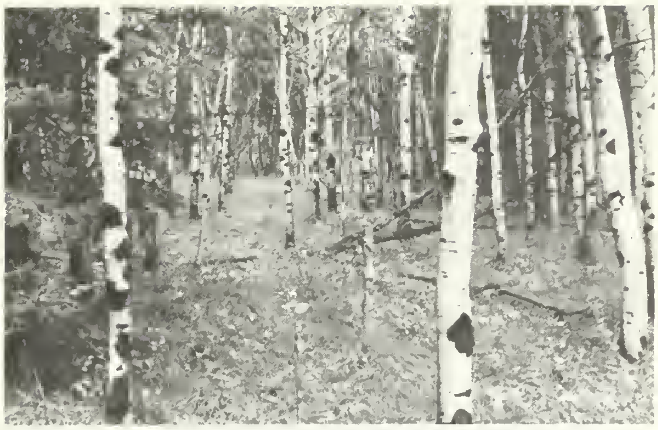

Figure 3.—This *Populus tremuloides-Pseudotsuga menziesii/Calamagrostis rubescens* community type in the Centennial Range has a predominantly grassy undergrowth.

Floristically, this type closely resembles the *Populus tremuloides-Pseudotsuga menziesii/Calamagrostis rubescens* community type described by Youngblood and Mueggler (1981) for western Wyoming.

Populus tremuloides-Pinus contorta/ Calamagrostis rubescens Community Type

(POTR-PICO/CARU c.t.)

The POTR-PICO/CARU c.t. was encountered scattered from the Aspen Range on the Caribou National Forest northward to the Yellowstone Plateau. The stands that were sampled ranged in elevation from approximately 5,700 to 8,000 ft (1 740 to 2 450 m). The type appeared most often on southerly exposures of gentle to moderately steep slopes.

Pinus contorta is the only conifer that conspicuously shares the tree overstory with *Populus tremuloides. Amelanchier alnifolia* is the only tall shrub of any consequence, but it is seldom abundant. Various species of low shrubs, such as *Symphoricarpos* spp., *Pachistima myrsinites,* and *Rubus parviflorus* may occur occasionally in substantial amounts. *Calamagrostis rubescens* is always a dominant species in the undergrowth (fig. 4). Other herbs often conspicuous are *Thalictrum fendleri, Osmorhiza chilensis, Geranium viscosissimum, Lupinus argenteus,* and *Elymus glaucus.* The type is clearly seral. The successional sequence appears to be toward a *P. contorta/C. rubescens* community type which may then go eventually to either a *Pseudotsuga menziesii/C. rubescens* or possibly *Abies lasiocarpa/C. rubescens* climax (Steele and others, in press).

P. tremuloides production and site index were high on the single stand sampled for productivity in this type. Many of the trees exceeded 14 inches (35 cm) d.b.h. Undergrowth production was low, less than 710 lb/acre (800 kg/ha). However, 73 percent of the undergrowth canopy cover consisted of species rated desirable as livestock forage; three-fourths of this consisted of graminoids and the remainder was primarily forbs.

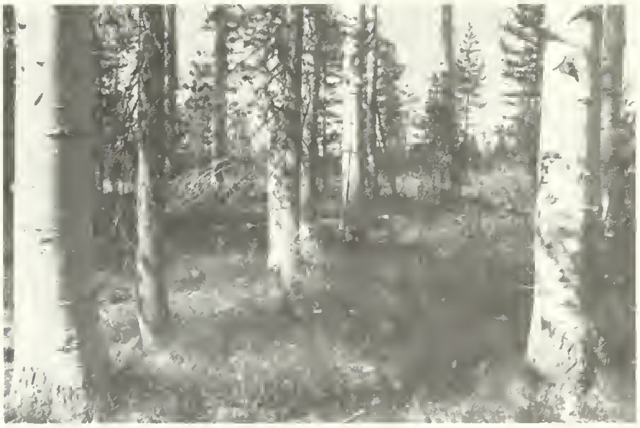

Figure 4.—The *Populus tremuloides-Pinus contorta/Calamagrostis rubescens* community type will gradually succeed to conifer-dominated communities with *C. rubescens* undergrowth; note the absence of shrubs.

Populus tremuloides/Amelanchier alnifolia-Pachistima myrsinites Community Type

(POTR/AMAL-PAMY c.t.)

This is a fairly common community type found on areas extending from the Bear River Range on the Caribou National Forest northward to the Snake River Range on the Targhee National Forest. The type occurred at moderate elevations ranging from 5,700 to 7,500 ft (1 740 to 2 290 m), on all exposures, and on moderately steep slopes.

The tree layer consists almost exclusively of *P. tremuloides,* although occasionally widely scattered conifers may be present. The type is characterized by prominent tall shrub and low shrub layers. The tall shrubs consist primarily of *Amelanchier alnifolia* or *Prunus virginiana* (or both), whereas *Pachistima myrsinites* is the dominant low shrub. *Symphoricarpos* spp. may be present, but it is seldom as abundant as *P. myrsinites.* Other shrubs commonly found in the type are *Berberis repens* and *Rosa woodsii.* The most abundant herbs usually are *Calamagrostis rubescens, Lupinus argenteus, Thalictrum fendleri,* and *Osmorhiza chilensis.* Occasionally *Carex geyeri, Arnica cordifolia,* and *Geranium viscosissimum* are abundant. Generally the type appears to be stable; however, it might also be slowly successional to a POTR-PSME/AMAL c.t. which in turn might be within either the *P. myrsinites* phase of the *Pseudotsuga menziesii/C. rubescens* h.t., or perhaps the *Abies lasiocarpa/C. rubescens* h.t. (Steele and others, in press).

P. tremuloides production in the POTR/AMAL-PAMY c.t. was fairly low, with a basal area averaging only 123 ft^2/acre (28.2 m^2/ha), but the site index was moderate. Most trees were less than 8 inches (20 cm) d.b.h. and reproduction was low to moderate.

Undergrowth production was also fairly low, averaging only about 850 lb/acre (950 kg/ha). This production consisted of 40 percent shrubs, 31 percent forbs, and 29 percent graminoids. An average 56 percent of the undergrowth canopy cover consisted of species rated desirable as livestock forage.

Populus tremuloides/Amelanchier alnifolia-Spiraea betulifolia Community Type (POTR/AMAL-SPBE c.t.)

This rather infrequent community type was encountered only on the Yellowstone Plateau, and on the Teton and Snake River Ranges, where it occurred at relatively low-to-moderate elevations between 5,500 and 6,600 ft (1 675 and 2 015 m). Most examples of the type were found on moderately steep southwesterly exposures.

The vegetation of this type is characterized by the scarcity of conifers, by a prominent tall shrub layer dominated by *Amelanchier alnifolia* or *Prunus virginiana* (or both), and a low shrub layer usually dominated by *Spiraea betulifolia*. In some stands, *Symphoricarpos* spp. may be codominant in the low shrub layer with *S. betulifolia*. *Rosa woodsii* is a constant low shrub, but it is seldom abundant. The herb layer is usually dominated by *Calamagrostis rubescens* and *Thalictrum fendleri*, with *Geranium viscosissimum* and *Lupinus argenteus* occasionally abundant. The POTR/AMAL-SPBE c.t. appears in most cases to be relatively stable, judging from the incidental presence of conifers. In some cases, however, the type might represent a seral stage on either the *Pseudotsuga menziesii/Symphoricarpos albus* or possibly the *P. menziesii/S. betulifolia* habitat types described by Steele and others (in press) for this area.

Basal area productivity of *Populus tremuloides* in these communities ranged from low to moderate, averaging only 128 ft^2/acre (29.4 m^2/ha); the average site index, however, rated fairly high (60 ft [18.3 m] at 80 years). Some of the trees exceeded 12 inches (30 cm) d.b.h., but most were less than 8 inches (20 cm) d.b.h. Reproduction of *P. tremuloides* was generally low.

Total production of undergrowth was moderate to high, averaging approximately 1,000 dry lb/acre (1 120 kg/ha). The proportion of shrubs, forbs, and graminoids comprising this total varied greatly between stands. Usually the shrubs produced more than either of the other two classes. The suitability of this undergrowth as livestock forage was low to moderate, with only 48 percent of the total canopy of the undergrowth consisting of species rated desirable.

The *P. tremuloides/S. betulifolia* community type described by Youngblood and Mueggler (1981) appears to be very similar to this type floristically.

Populus tremuloides/Amelanchier alnifolia-Symphoricarpos oreophilus Community Type (POTR/AMAL-SYOR c.t.)

POTR/AMAL-SYOR is one of the most abundant aspen community types in southeastern Idaho. It was encountered more frequently than any other type. It is most abundant on the Caribou, Snake River, and Teton Ranges in the central portion of the study area. The type usually occurs at relatively low to moderate elevations between 5,200 and 7,300 ft (1 585 and 2 225 m). Although it was most frequently found on moderately steep (average 25 percent) southerly exposures, it does not appear to be restricted by either aspect or slope steepness.

Conifers seldom occur in this type, and never in abundance. The type is characterized by the presence of a tall shrub layer in which *Amelanchier alnifolia* or *Prunus virginiana* (or both) are prominent (fig. 5), and a low shrub layer dominated by *Symphoricarpos* spp. Neither *Pachistima myrsinites* nor *Spiraea betulifolia* contribute substantially to the low shrub layer. The herbaceous component of the vegetation is usually dominated by one or more of the following species: *Calamagrostis rubescens, Elymus glaucus, Lupinus argenteus, Thalictrum fendleri,* and *Geranium viscosissimum.* Where grazing has been particularly abusive, *Poa pratensis* and *Poa nervosa* often tend to become abundant.

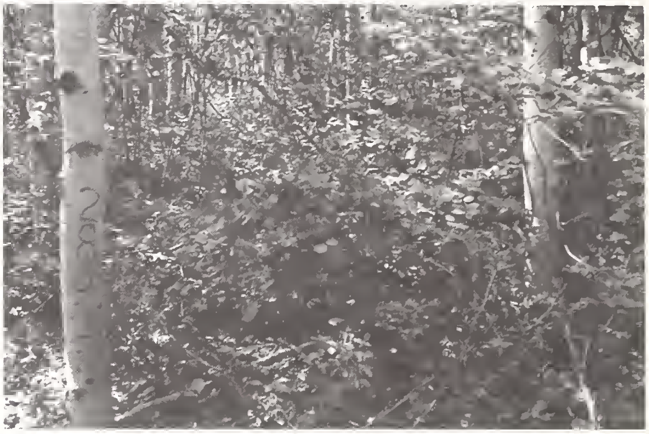

Figure 5.—This *Populus tremuloides/Amelanchier alnifolia-Symphoricarpos oreophilus* type exemplifies those aspen communities with undergrowth consisting of both tall shrub and low shrub layers as well as an herb layer. It was the most frequent aspen community encountered in southeastern Idaho.

The POTR/AMAL-SYOR c.t. is considered to be primarily a stable community. Occasional stands, however, may be slowly successional to the POTR-PSME/AMAL c.t., which is considered a seral community within the *Pseudotsuga menziesii/Symphoricarpos albus* or possibly the *Abies lasiocarpa/S. albus* habitat types described by Steele and others (in press).

Production of *Populus tremuloides* appears to be fairly low, with basal area averaging only 105 ft^2/acre (24.1 m^2/ha) and a site index averaging 49 feet (14.9 m) at 80 years. Trees exceeding 12 inches (30 cm) d.b.h. were occasionally present, but most were less than 8 inches (20 cm) d.b.h. Reproduction of *P. tremuloides* averaged low to moderate.

Undergrowth production is moderately high, averaging almost 980 lb/acre (1 100 kg/ha). Although considerable variation exists between stands within the type, generally the undergrowth production consists of approximately equal amounts of forbs and graminoids, with shrub production averaging less than 20 percent of the total. Suitability of this undergrowth as forage is relatively high, with 56 percent of the canopy cover consisting of species rated desirable.

Hoffman and Alexander (1980) described a *P. tremuloides/S. oreophilus* habitat type for northwestern Colorado that appears similar to this type except for the abundance of *Lathyrus leucanthus* and *Vicia americana* in the Colorado type.

A *P. tremuloides/S. oreophilus* habitat type described by Lewis (1975) for northern Nevada appears fairly similar to our type in that it contains the tall shrub element and a low shrub element dominated by *S. oreophilus*. The northern Nevada type, however, apparently lacks some of the characteristic herbs such as *C. rubescens, E. glaucus,* and *L. argenteus*. The *P. tremuloides/P. virginiana* community type described by Youngblood and Mueggler (1981) appears very similar to our POTR/AMAL-SYOR c.t.

Populus tremuloides/Amelanchier alnifolia-Calamagrostis rubescens Community Type (POTR/AMAL-CARU c.t.)

This common community type is widely dispersed across both the Caribou and Targhee National Forests. It was encountered at low through moderate elevations between 5,500 and 7,300 ft (1 675 and 2 225 m). The type most commonly occupied slopes with southerly aspects.

The following characterize the type: the virtual absence of conifers; a pronounced layer of tall shrubs dominated by *Amelanchier alnifolia,* or *Prunus virginiana,* or both; the absence of a well-defined low shrub layer; and an herbaceous layer usually dominated by *Calamagrostis rubescens*. Species composition is very similar to that of the POTR/AMAL-SYOR c.t. except for the virtual absence of a low shrub layer dominated by *Symphoricarpos* spp. In both types *Thalictrum fendleri, Elymus glaucus, Lupinus argenteus,* and *Geranium viscosissimum* may be important in the undergrowth, and *Poa pratensis* or *Poa nervosa* (or both) may tend to increase appreciably with repeated heavy grazing. The POTR/AMAL-CARU c.t. appears to be successionally stable in most cases. Where seral, it probably is a successional community within the *Pseudotsuga menziesii/C. rubescens* habitat type (Steele and others, in press).

Basal area production of *Populus tremuloides* appears to be moderate, averaging 141 ft^2/acre (32.4 m^2/ha), but the site index was fairly low, averaging only 49 ft (14.9 m) at 80 years. Although some stems exceeded 10 inches (25 cm) d.b.h., most were less than 8 inches (20 cm) d.b.h. *P. tremuloides* reproduction generally was moderately high, with stems under 1 ft (3 dm) high averaging over 730/acre (1 800/ha) and those 1 to 4.5 ft (3 to 14 dm) high averaging over 1,335/acre (3 300/ha).

Production of undergrowth appears moderate to high. Undergrowth averaged 1,035 lb/acre (1 160 kg/ha), the bulk of which was roughly equally divided between the forb and graminoid vegetation classes. An average of only 7 percent of the undergrowth consisted of shrubs. Overall suitability of the undergrowth as livestock forage is moderate to high; 57 percent of the canopy cover was comprised of species rated desirable.

Except for appreciably lesser quantities of *S. oreophilus,* this type appears fairly similar to the western Wyoming *P. tremuloides/P. virginiana* community type (Youngblood and Mueggler 1981).

Populus tremuloides/Pachistima myrsinites-Calamagrostis rubescens Community Type (POTR/PAMY-CARU c.t.)

The POTR/PAMY-CARU c.t. appears to be a fairly restricted type found primarily on the Aspen Range, but was also observed as far north as the northern end of the Caribou Range. The type occurred at elevations ranging from approximately 6,100 to 8,000 ft (1 850 to 2 450 m), and occupied primarily northerly aspects and moderately steep slopes.

The vegetation is characterized by a lack of conifers in the overstory, the absence of a pronounced tall shrub layer, a low shrub layer usually dominated by *Pachistima myrsinites,* and an herb layer dominated by *Calamagrostis rubescens*. Other species that are usually present and may be abundant include *Symphoricarpos oreophilus, Lupinus argenteus,* and *Geranium viscosissimum*. The type is thought to be primarily stable.

Populus tremuloides production appears to be only moderate in the type. Basal area of sampled stands averaged 145 ft^2/acre (33.3 m^2/ha), but site index averaged only 50 ft (15.2 m) at 80 years. Some of the trees in the sample plots exceeded 12 inches (30 cm) d.b.h., but most were less than 8 inches (20 cm) d.b.h. Reproduction of *P. tremuloides,* however, was usually abundant.

Undergrowth production appears to be fairly low, averaging approximately 640 lb/acre (717 kg/ha) on the sample plots. About 20 percent of this production consisted of shrubs, and the remainder was about equally divided between the forb and graminoid classes. This undergrowth is considered moderately suitable as livestock forage; an average 56 percent of the canopy cover consisted of species rated desirable.

The *P. tremuloides/C. rubescens* community type described by Youngblood and Mueggler (1981) for western Wyoming appears to be a generalization which includes our POTR/PAMY-CARU, POTR/SYOR-CARU, and POTR/CARU community types. *Calamagrostis rubescens* is a dominant herb in all of these types.

Populus tremuloides/Pachistima myrsinites-Geranium viscosissimum Community Type (POTR/PAMY-GEVI c.t.)

The POTR/PAMY-GEVI c.t. is concentrated on the Aspen and Webster Ranges of the Caribou National Forest, although it has been observed as far north as the west slope of the Teton Range. It was found most frequently at the higher elevations, from 6,900 to 8,200 ft (2 100 to 2 500 m), and not restricted by exposure.

This type differs from the POTR/PAMY-CARU c.t. primarily by the absence or reduced abundance of *Calamagrostis rubescens* in the herb layer; *Geranium viscosissimum* is generally considerably more abundant (fig. 6). *Pachistima myrsinites* remains a dominant low shrub, but *Symphoricarpos* spp. may also be abundant. A well-defined tall shrub layer is lacking. The type is thought to be relatively stable.

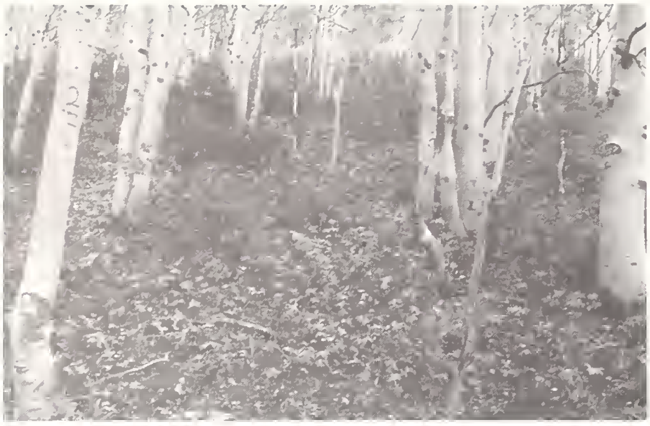

Figure 6.—A *Populus tremuloides/Pachistima myrsinites-Geranium viscosissimum* community type in the Webster Range. This is an example of an aspen community with just low shrubs and herbs forming the undergrowth.

Production data were acquired from only two stands within the type. The basal area and site index of *Populus tremuloides* in these stands were fairly low, averaging 129 ft^2/acre (29.6 m^2/ha) and 47 ft (14.3 m) at 80 years. Most trees were less than 8 inches (20 cm) d.b.h. Reproduction of *P. tremuloides* was scarce.

Production of undergrowth was very low, averaging slightly over 500 lb/acre (560 kg/ha). Most of this consisted of forbs (65 percent), with shrubs and graminoids about equally sharing the remainder. The undergrowth is considered moderately desirable livestock forage since 51 percent of the cover consisted of species rated desirable.

This type is probably contained within the *P. tremuloides/Symphoricarpos oreophilus* community type described by Youngblood and Mueggler (1981) for western Wyoming.

Populus tremuloides/Spiraea betulifolia-Calamagrostis rubescens Community Type

(POTR/SPBE-CARU c.t.)

Only three examples of this minor community type were observed, and all were on the western portion of the Yellowstone Plateau. These stands occurred at elevations between 6,000 and 6,800 ft (1 830 and 2 075 m), and occupied moderately steep southerly exposures.

Conifers are only incidental in the type. A pronounced tall shrub layer is absent, although minor qualities of *Prunus virginiana* may be present. A low shrub layer dominated by *Spiraea betulifolia* and *Symphoricarpus albus,* and an herb layer containing an abundance of *Calamagrostis rubescens* and *Thalictrum fendleri* are characteristic. The type appears to be either stable or possibly slowly seral to the *Pseudotsuga menziesii/ S. betulifolia* or *P. menziesii/S. albus* habitat types described by Steele and others (in press).

Only one stand was intensively sampled for production. Although the basal area of *Populus tremuloides* was relatively great in this stand, 160 ft^2/acre (36.7 m^2/ha), the site index was only 46 ft (14 m) at 80 years. Trees ranged in size up to 12 inches (30 cm) d.b.h., with the majority in the 6- to 8-inch (15- to 20-cm) size class. Undergrowth production was moderate at approximately 850 lb/acre (950 kg/ha). Of this, 25 percent consisted of shrubs, 35 percent forbs, and 40 percent graminoids. This undergrowth was considered moderately suitable as forage; 53 percent of the canopy cover consisted of desirable species.

The *P. tremuloides/S. betulifolia* community type described by Youngblood and Mueggler (1981) for western Wyoming is floristically similar to this type except for the greater abundance of *Amelanchier alnifolia.*

Populus tremuloides/Symphoricarpos oreophilus-Calamagrostis rubescens Community Type (POTR/SYOR-CARU c.t.)

This is a major community type (fig. 7) that ranges broadly throughout eastern Idaho. It was second in abundance only to the POTR/AMAL-SYOR c.t. This type occurred at low-to-moderate elevations between 5,700 and 7,500 ft (1 740 and 2 290 m), and most frequently on moderately steep southerly exposures.

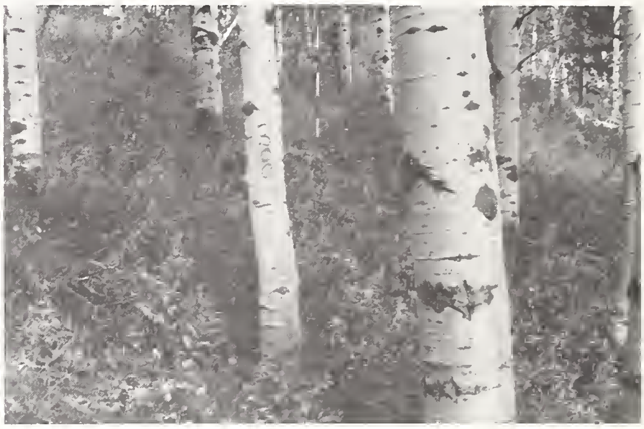

Figure 7.—The *Populus tremuloides/Symphori carpos oreophilus-Calamagrostis rubescens* community type is very common in southeastern Idaho; the undergrowth generally consists of a productive mixture of low shrubs and herbs.

Conifers are scarce to nonexistent in this type, and a pronounced tall shrub layer is lacking. A distinct low shrub layer dominated by *Symphoricarpos* spp. is present. Both *S. albus* and *S. oreophilus* occur in these communities either alone or in combination. The forb layer is usually dominated by *Calamagrostis rubescens;* if this grass is scarce, *Carex geyeri* is abundant. Other herbaceous species likely to be prominent are *Geranium viscosissimum, Lupinus argenteus, Thalictrum fendleri,* and *Elymus glaucus.* Under prolonged heavy grazing, *Poa pratensis* and *Poa nervosa* are likely to become abundant. The POTR/SYOR-CARU c.t. is considered primarily stable. Some communities keying to this type, however, may eventually succeed to the POTR-PSME/SYOR c.t., which is probably a seral type within the *Pseudotsuga* *menziesii/Calamagrostis rubescens* habitat type described by Steele and others (in press).

Basal area production of *Populus tremuloides* within this type ranged from 86 to 206 ft^2/acre (19.7 to 47.3 m^2/ha), and averaged a low to moderately productive 138 ft^2/acre (31.7 m^2/ha). Site index was also low to moderate, averaging 51 ft (15.5 m) at 80 years. Although trees in the 10- to 12-inch (25- to 30-cm) size class were not uncommon, most were less than 8 inches (20 cm) d.b.h. Reproduction of *P. tremuloides* averaged low to moderate.

Although undergrowth production within the type ranged from approximately 470 to 2,050 lb/acre (525 to 2 300 kg/ha), the average was fairly high, 1,138 lb/acre (1 276 kg/ha). On the average, only 6 percent of this consisted of shrubs, and the remainder was about equally divided between forbs and graminoids. This undergrowth appeared well suited for livestock since 60 percent of the canopy cover consisted of species classed as desirable.

The *P. tremuloides/C. rubescens* type described by Youngblood and Mueggler (1981) for western Wyoming appears to be a generalization that includes this type as well as our POTR/PAMY-CARU and POTR/CARU community types. In central Idaho, Schlatterer (1972) described a somewhat similar *P. tremuloides/S. oreophilus-Carex geyeri* community that differed primarily by the substitution of *C. geyeri* for *C. rubescens*, the lack of *E. glaucus*, and the presence of herbaceous species such as *Festuca idahoensis* not found in our type.

Populus tremuloides/Symphoricarpos oreophilus-Poa pratensis Community Type (POTR/SYOR-POPR c.t.)

This type is fairly abundant and widely distributed over both forests. The sampled stands ranged from fairly low to moderately high elevations, 5,200 and 7,500 ft (1 585 and 2 290 m), and occurred most frequently on rather gently sloped (average 13 percent) southerly exposures.

The POTR/SYOR-POPR c.t. appears to be a distinct grazing disclimax of the POTR/SYOR-CARU c.t. It is characterized by the lack of conifers as a prominent part of the overstory, the absence of a distinct tall shrub layer, a low shrub layer dominated by *Symphoricarpos* spp., and the abundance of *Poa pratensis* and/or *Poa nervosa* and lack of *Rudbeckia occidentalis* in the herb layer. Other herbs frequently abundant include *Geranium viscosissimum, Lupinus argenteus, Bromus carinatus,* and *Taraxacum officinale.* The latter is additional evidence of a grazing disclimax.

Basal area production of *Populus tremuloides* appears moderate to high, ranging from 112 to 187 ft^2/acre (25.7 to 42.9 m^2/ha) in the sampled stands and averaging 154 ft^2/acre (35.4 m^2/ha). Site index is also fairly high, averaging 56 ft (17.1 m) at 80 years. Most of the trees were less than 8 inches (20 cm) d.b.h., although occasional trees up to 14 inches (35 cm) d.b.h. were encountered on the sample plots. Reproduction of *P. tremuloides* was fairly scarce.

Production of undergrowth appears moderate, averaging 914 lb/acre (1 025 kg/ha) in the sampled stands. Only 5 percent of this consisted of shrubs, 45 percent forbs, and 50 percent graminoids. Undergrowth provides poor livestock forage; only 41 percent of the undergrowth canopy cover consisted of desirable vegetation.

Populus tremuloides/Symphoricarpos oreophilus-Rudbeckia occidentalis Community Type (POTR/SYOR-RUOC c.t.)

This community type is widely distributed across the Caribou National Forest and southern end of the Targhee National Forest at moderate elevations, ranging from 5,700 to 7,200 ft (1 740 to 2 195 m), encountered most frequently on gentle to moderately steep south-facing slopes.

The POTR/SYOR-RUOC c.t. is a grazing disclimax characterized by a scarcity of conifers, lack of a distinct tall shrub layer, a low shrub layer dominated by *Symphoricarpos* spp., and the prominence of *Rudbeckia occidentalis* in the herb layer. *Elymus glaucus, Senecio serra,* and annuals are likely to be more prominent here than in the POTR/SYOR-POPR c.t., another grazing disclimax. Such annuals as *Nemophila breviflora* and *Collinsia parviflora* are often abundant. The type is probably a grazing disclimax of the POTR-ABLA/THFE c.t., but might also be seral to the POTR-ABLA/SYOR c.t. or POTR-PSME/SYOR c.t.

The type appears moderately productive for *Populus tremuloides,* averaging 139 ft^2/acre (31.9 m^2/ha) basal area, with a site index of 55 ft (16.8 m) at 80 years. Trees over 12 inches (30 cm) d.b.h. were not uncommon. *Populus tremuloides* reproduction was low.

The undergrowth appears very productive, averaging 1,248 lb/acre (1 399 kg/ha). Over 70 percent of this was forbs consisting primarily of *R. occidentalis,* 21 percent graminoids, and the remainder shrubs. Suitability of this undergrowth as livestock forage, however, was poor; only 30 percent of the total canopy cover consisted of species considered desirable and 32 percent least desirable.

Youngblood and Mueggler (1981) described a *P. tremuloides/R. occidentalis* community type for western Wyoming that is similar to this type except for the amount of *S. oreophilus.*

Populus tremuloides/Artemisia tridentata-Festuca idahoensis Community Type (POTR/ARTR-FEID c.t.)

The POTR/ARTR-FEID c.t. was found primarily at the lower elevations where the aspen zone merges into the sagebrush steppe. It is a minor type that was encountered most frequently along the gently sloping foothills and benches of the Centennial Range fringing the northern edge of the Upper Snake River Plains.

The type is characterized by the absence of both conifers and a tall shrub layer, and the prominence of *Artemisia tridentata* ssp. *vaseyana* in the low shrub layer and *Festuca idahoensis* in the herb layer. It appears to occupy a very restricted environment in an area where growth of *Populus tremuloides* is limited by moisture availability. The type usually occurs as peninsulas or small, single-clone islands in shrub steppes dominated by an *A. tridentata* and *Purshia tridentata* shrub layer, with *F. idahoensis* the predominant herb. The type appears to be relatively stable. In some places, however, the tree overstory is not reproducing and succession appears to be leading to a shrub-steppe type dominated by *A. tridentata* and *F. idahoensis* similar to the *A. tridentata* ssp. *vaseyana/F. idahoensis* habitat type described by Hironaka and Fosberg (1979). Production was not measured in this type. Undergrowth production, however, is estimated to be low, between 550 and 800 lb/acre (600 and 900 kg/ha) of material only moderately suitable as livestock forage.

The type includes what appears to be a variant dominated by pigmy *P. tremuloides*. This variant occurs as small, isolated, single-clone groves surrounded by sagebrush steppe. The rather dense *P. tremuloides* overstory may be over 25 years old, but the basal diameters of the stems are only 2 to 3 inches (5 to 8 cm) and their heights seldom exceed 10 ft (3 m). Judging from the presence of old dead stems and the lack of evidence of fire, these groves apparently continue to reproduce naturally and persist for long periods of time. Whether the dwarf nature of the *P. tremuloides* in these clones is genetically or environmentally induced has not yet been determined. The environment is generally harsh. Some of these pigmy stands have crooked boles, which may be caused by drifting snow.

Youngblood and Mueggler (1981) described for western Wyoming a *P. tremuloides/A. tridentata* community type very similar to the POTR/ARTR-FEID c.t.

Populus tremuloides/Geranium viscosissimum Community Type

(POTR/GEVI c.t.)

This is a minor community type, unrestricted geographically, occurring at moderate to high elevations between 6,300 and 8,200 ft (1 920 and 2 500 m). It was encountered on moderately steep slopes and was not limited by exposure.

The type lacks appreciable amounts of conifers and well-defined shrub layers. Up to 10 percent canopy cover of *Symphoricarpos* spp. may be present, however. The herb layer is comprised primarily of forbs among which *Geranium viscosissimum* is always prominent. *Osmorhiza chilensis, Thalictrum fendleri, Lupinus argenteus,* and *Elymus glaucus* may also be abundant. Although *Rudbeckia occidentalis, Poa pratensis,* or *Poa nervosa* may be present, none of these contribute substantially to the undergrowth cover. The type is thought to be either stable or slowly successional to the POTR- ABLA/THFE c.t.

Only one stand was intensively sampled for productivity in this type. *Populus tremuloides* production was moderate to high, with 164 ft^2/acre (37.7 m^2/ha) basal area and a site index of 52 ft (15.8 m) at 80 years. Trees over 12 inches (30 cm) d.b.h. were fairly common in this stand. The undergrowth was only moderately productive at approximately 800 lb/acre (897 kg/ha). This consisted of 74 percent forbs and 25 percent graminoids. Forage suitability was fairly low, with only 47 percent of the canopy cover comprised of species rated desirable.

Youngblood and Mueggler (1981) described a *P. tremuloides/T. fendleri* community type for western Wyoming which is similar to this type except lacks the abundance of *Geranium viscosissimum* and *O. chilensis.* A somewhat similar *P. tremuloides/T. fendleri* habitat type occurs in northwestern Colorado (Hoffman and Alexander 1980); this type, however, contains substantial amounts of *Lathyrus leucanthus, Vicia americana,* and *Ligusticum porteri.*

Populus tremuloides/Wyethia amplexicaulis Community Type

(POTR/WYAM c.t.)

The POTR/WYAM c.t., although not abundant, is widely distributed from the Bear River Range in the south, northward to the Centennial Range. It was encountered at moderate elevations between 6,300 and 6,700 ft (1 920 and 2 050 m), usually on gently sloping terrain with fairly heavy soils.

The type is characterized by the lack of both conifers and well-defined shrub layers, and the dominance of *Wyethia amplexicaulis* in the undergrowth (fig. 8). Other species sometimes found in abundance include *Geranium viscosissimum, Poa pratensis, Rudbeckia occidentalis, Taraxacum officinale,* and *Elymus glaucus*. The type is considered fairly stable, but some stands appear to have been altered appreciably by heavy grazing. The overwhelming dominance of *W. amplexicaulis* and the abundance of *P. pratensis, R. occidentalis,* and *T. officinale* lend credence to rather severe grazing-induced changes.

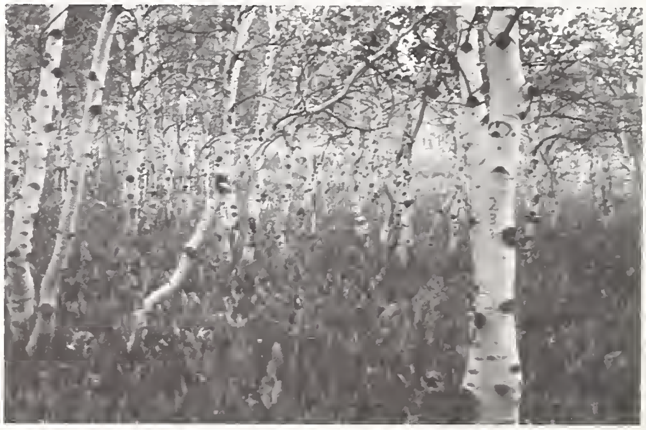

Figure 8.—The distinctive *Populus tremuloides/ Wyethia amplexifolius* community type usually occurs on gentle slopes or flats with fairly heavy soils. A dense undergrowth of *W. amplexifolius* may be at least partly attributed to abusive grazing in the past.

Populus tremuloides occurs in rather open, parklike stands in this type. The type appears to be the least productive for *P. tremuloides* of any of the community types observed, averaging only 74 ft^2/acre (17 m^2/ha) of basal area and a site index at 80 years of only 31 ft (9.4 m). Seldom did stems exceed 8 inches (20 cm) d.b.h., and reproduction was poor.

Undergrowth production appears to be high. The intensively sampled stands averaged 1,169 lb/acre (1 310 kg/ha) of undergrowth consisting of 90 percent forbs and 9 percent graminoids. This undergrowth, however, was among the least suitable for forage of any of the community types. Only 30 percent of the canopy cover consisted of species rated desirable, and 37 percent consisted of species rated least desirable for livestock forage.

A *P. tremuloides/W. amplexicaulis* community type was described by Youngblood and Mueggler (1981) for western Wyoming.

Populus tremuloides/Calamagrostis rubescens Community Type (POTR/CARU c.t.)

The POTR/CARU c.t. is the third most frequently encountered aspen community type in southeastern Idaho. It is widely distributed across both the Caribou and Targhee National Forests. The type has a wide elevational range, between 5,600 and 8,200 ft (1 700 and 2 500 m), and does not appear to be restricted by either exposure or slope gradient.

Conifers are usually incidental in this type; although *Pseudotsuga menziesii* may occasionally be present, by definition it never exceeds 10 percent canopy cover. Distinct tall shrub and low shrub layers are lacking; *Symphoricarpos oreophilus* is usually present, but only in small amounts. The undergrowth is principally herbaceous and dominated by *Calamagrostis rubescens* (fig. 9). Other prominent herbs usually include *Lupinus argenteus, Geranium viscosissimum, Osmorhiza chilensis, Thalictrum fendleri,* and occasionally *Elymus glaucus.*

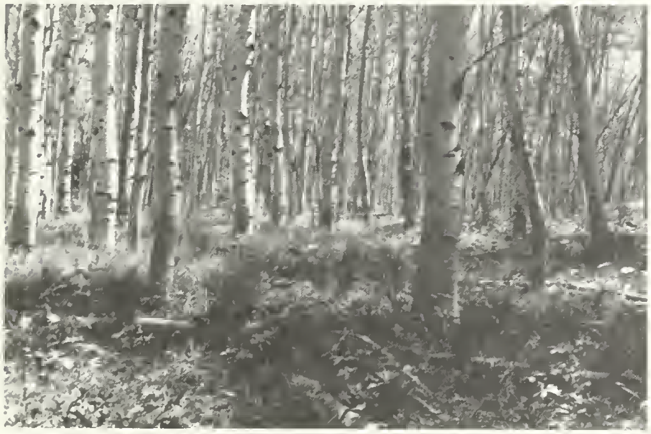

Figure 9.—The undergrowth in the *Populus tremuloides/Calamagrostis rubescens* community type characteristically contains few shrubs but a luxuriant mixture of herbs dominated by *C. rubescens.*

The POTR/CARU c.t. is considered primarily a stable aspen type. Except for the difference in amounts of *Symphoricarpos* spp., it is quite similar to the POTR/SYOR-CARU c.t. Some communities, therefore, may be successional to the POTR/SYOR-CARU c.t., which in turn could eventually succeed to the POTR-PSME/SYOR c.t. which is a seral type probably within the *P. menziesii/C. rubescens* habitat type described by Steele and others (in press).

Production of *Populus tremuloides* appears to be moderate within this type; basal area of sampled stands averaged 144 ft^2/acre (33.1 m^2/ha), with a site index at 80 years of 54 ft (16.4 m). Occasional stems exceeded 12 inches (30 cm) d.b.h., but the majority were less than 8 inches (20 cm) d.b.h.. Reproduction of *P. tremuloides* was relatively great, with an average of 1,100 suckers/acre (2 700/ha) less than 1 ft (3 dm) high and over 1,500 suckers/acre (3 700/ha) between 1 and 4½ ft (3 and 14 dm) high.

Undergrowth production varied appreciably, between 469 and 1,270 lb/acre (526 and 1 424 kg/ha), and averaged a moderate 867 lb/acre (972 kg/ha); 65 percent of this consisted of graminoids, primarily *C. rubescens,* 33 percent forbs, and the remaining 2 percent shrubs. This undergrowth is generally suitable as livestock forage. An average 70 percent of the canopy cover consisted of species rated desirable while the remainder were rated moderately desirable forage species.

Opinions differ regarding the value of *C. rubescens* as a livestock forage, perhaps because palatability varies during the year. Although it is generally rated as fair to good forage for cattle in the Blue Mountains of eastern Oregon, Skovlin (1967) found that palatability and forage quality decline rapidly as the season advances. He determined that the crude protein content of *C. rubescens* was greater than that of other major forage species during July, but fell rapidly and was less than the other species by early September. McLean and others (1969) found that *C. rubescens* on the southern British Columbia rangelands contained adequate nutrients for rapid growth of yearlings until the first of August and for pregnant cows and replacement heifers until the first of September. It was readily eaten by cattle in British Columbia during early summer but became unpalatable by mid-August. Generally, it is not readily eaten by sheep.

A *P. tremuloides/C. rubescens* community type was also described by Youngblood and Mueggler (1981) for western Wyoming. Their type, however, contains considerable floristic variation which is separated by our POTR/PAMY-CARU and POTR/SYOR-CARU types.

Populus tremuloides/Calamagrostis rubescens-Poa pratensis Community Type (POTR/CARU-POPR c.t.)

Although most of the stands within this type were encountered on the Centennial Range at the northern end of the Targhee National Forest, a few stands were found as far south as the Caribou Range. Stands within this type occurred at moderate elevations, between 6,100 and 6,900 ft (1 850 and 2 100 m), on rather gentle slopes, and on all exposures.

The type appears to be a grazing-induced alteration of the POTR/CARU c.t. Conifers are only incidental, if present at all, and well-defined shrub layers are lacking. The undergrowth is dominated by *Calamagrostis rubescens* and either *Poa pratensis* or *Poa nervosa.* Although *C. rubescens* grows as a spreading mat, the shallow rootstalks of new plants apparently are easily

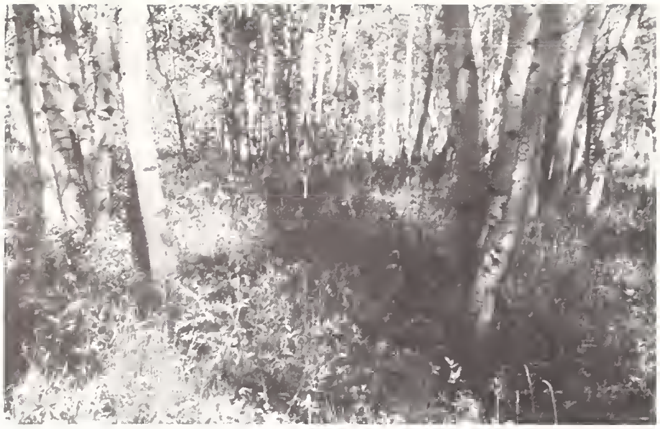

Figure 10.—The *Populus tremuloides/Poa pratensis* community type is considered a grazing disclimax where heavy grazing has permitted *P. pratensis* to invade and dominate the undergrowth.

pulled up with early grazing (Skovlin 1967). The type is differentiated from the POTR/CARU c.t. primarily by the great amount of *Poa* spp. A scattering of other graminoids and forbs may be present also, but *Geranium viscosissimum, Lupinus argenteus,* and *Taraxacum officinale* are usually the only ones that occur in any abundance.

Productivity of *Populus tremuloides* appears to be low to moderate, with an average basal area of 149 ft^2/acre (34.2 m^2/ha) and a site index of 47 ft (14.3 m) at 80 years. Stems over 14 inches (35 cm) d.b.h. were not uncommon, but most were less than 8 inches (20 cm) d.b.h. Sucker reproduction was relatively great.

Undergrowth productivity in the sampled stands was low to moderate, averaging 768 lb/acre (861 kg/ha). Graminoids comprised 56 percent of the total, forbs 42 percent, and the remainder was shrubs. This undergrowth is considered only moderately suitable as livestock forage; only 55 percent of the canopy cover consisted of species rated desirable.

Populus tremuloides/Poa pratensis Community Type (POTR/POPR c.t.)

This type is widely distributed throughout the Caribou and Targhee National Forests. It was encountered over a wide range in elevation, from 6,000 to 7,500 ft (1 830 to 2 290 m), on fairly gentle slopes and on all exposures. The type occurs primarily near stream and valley bottoms where livestock naturally tend to congregate.

The POTR/POPR c.t. is a grazing disclimax apparently caused by continuous heavy cattle use (fig. 10). It appears to be a further degradation of the POTR/SYOR-POPR c.t. The type is characterized by a lack of both conifers and well-defined shrub layers, and the almost exclusive dominance of *Poa pratensis* or *Poa nervosa* (or both) in the undergrowth. Other species that may be fairly abundant include *Taraxacum officinale, Lupinus argenteus, Geranium viscosissimum,* and *Thalictrum fendleri.*

Populus tremuloides productivity is usually very high, probably because of the relatively deep soils of the bottom lands where the type tends to occur. Its basal area averaged 220 ft^2/acre (50.5 m^2/ha), with a site index of 62 ft (18.9 m) at 80 years. Most stems were in the 8- to 12-inch (20- to 30-cm) d.b.h. size class; stems exceeding 14 inches (35 cm) d.b.h. were not uncommon. Sucker reproduction was low, possibly because of repeated heavy browsing.

Undergrowth production was only moderate, averaging 859 lb/acre (963 kg/ha). Of this, 61 percent was graminoids and 38 percent was forbs. The undergrowth was considered of low forage suitability, for only 33 percent of the canopy cover consisted of desirable forage species.

Populus tremuloides/Rudbeckia occidentalis Community Type (POTR/RUOC c.t.)

This minor type was observed only on the Webster, Aspen, and Bear River Ranges of the Caribou National Forest. It occurred at moderate elevations between 6,500 and 7,300 ft (1 980 and 2 225 m). Most stands were found on moderately steep southerly exposures.

Although the type lacks well-defined shrub layers, *Symphoricarpos* spp. is a constant shrub that occurs in only small quantities. *Abies lasiocarpa* is usually present as reproduction, but is never abundant. The type is characterized by the dominance of *Rudbeckia occidentalis* in the undergrowth. Other prominent species may include *Ligusticum filicinum, Agastache urticifolia, Osmorhiza occidentalis, Thalictrum fendleri, Heracleum lanatum, Fragaria vesca,* and *Elymus glaucus.* The type is thought to be a grazing modification of the POTR-ABLA/SYOR c.t.

Productivity of *Populus tremuloides* in the type is rather low, averaging only 106 ft^2/acre (24.3 m^2/ha) basal area with a site index of 54 ft (16.5 m) at 80 years. Stems did not exceed 12 inches (30 cm) d.b.h.; most were less than 8 inches (20 cm) d.b.h. Sucker reproduction was relatively sparse. Undergrowth productivity was low to moderate, averaging approximately 794 lb/acre (890 kg/ha). Most of this undergrowth consisted of forbs, 81 percent; only 17 percent was graminoids. Forage suitability was fairly low; only 48 percent of the canopy cover consisted of desirable species and 17 percent consisted of least desirable species.

Our POTR/RUOC c.t. appears to be a composite of the *Populus tremuloides/Rudbeckia occidentalis* and *P. tremuloides/Heracleum lanatum* types described by Youngblood and Mueggler (1981).

Other Aspen Communities

Of the total 325 aspen stands examined in southeastern Idaho, only six did not fit the classification we developed. These stands were single encounters representing rather unusual situations. If encountered repeatedly, justification would exist for recognizing them as distinct community types.

Where aspen occupy a wet meadow, seep, or other high water-table site, the understory may be dominated by species especially well adapted to moist situations. Two such sites were observed in the Centennial Range. One semiwet meadow occuped by aspen had 75 percent canopy cover of *Alopecurus alpinus* and minor amounts of *Aster foliaceus* and *Elymus glaucus* in the undergrowth. In another, the undergrowth was dominated by *Agrostis alba* accompanied by *Aster foliaceus, Poa palustris, Geranium viscosissimum,* and *Taraxicum officinale.* One stand in the Portneuf Range on the Caribou National Forest was observed where *Carex aquatilis* completely dominated the undergrowth.

Near the Utah border in the Bear River Range a stand was encountered that had the undergrowth dominated by *Lathyrus lanszwertii,* with *E. glaucus* and *Nemophila breviflora* also abundant. Although this was the only such stand seen in southeastern Idaho, it appears very similar to some aspen communities observed in northern Utah. The abundance of *L. lanszwertii* may in part be attributable to heavy past grazing.

In one atypical situation with considerable ground disturbance by pocket gophers, *Linaria vulgaris* and *Nemophila breviflora* completely dominated the undergrowth. The stand occupied a gentle southwesterly exposure on the Yellowstone Plateau. Presumably, *L. vulgaris* invaded the site following severe soil disturbance.

One stand was observed on the Bear River Range where *Vaccinium globulare* completely dominated the undergrowth, with 70 percent canopy cover. This community occurred at 7,700 ft (2 350 m) elevation and had an overstory where *Populus tremuloides* and *Pinus contorta* were codominants, with lesser amounts of *Abies lasiocarpa.* The community was obviously seral within the *A. lasiocarpa/V. globulare* habitat type described by Steele and others (in press) for the area.

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APPENDIX A1

Appendix A1. Constancy and average canopy cover (latter in parenthesis) of important plants in aspen community types within the Caribou and Targhee National Forests. (Code for constancy values is at the bottom of the table; canopy cover is the average percent for those stands in which the species was found, except "**" denotes a trace value.)

Community Type:	POTR-ABLA/SYOR	POTR-ABLA/THFE	POTR-PSME/AMAL	POTR-PSME/SYOR	POTR-PSME/CARU	POTR-PICO/CARU	POTR/AMAL-PAMY	POTR/AMAL-SPBE	POTR/AMAL-SYOR	POTR/AMAL-CARU	POTR/PAMY-CARU	POTR/PAMY-GEVI
No. of stands:	6	3	9	8	7	10	25	8	53	20	7	17
TREES												
Abies lasiocarpa > 1.5 m tall	8(9)	10(17)	1(**)	4(4)	–(0)	3(**)	2(1)	1(4)	1(1)	1(5)	–(0)	2(1)
Abies lasiocarpa < 1.5 m tall	10(4)	10(7)	–(0)	4(1)	–(0)	2(2)	3(**)	1(**)	1(**)	1(**)	4(**)	4(**)
Juniperus scopulorum > 1.5 m	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(1)	1(**)	–(0)	–(0)
Juniperus scopulorum < 1.5 m	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	–(0)	–(0)	–(0)
Picea engelmannii > 1.5 m	–(0)	3(10)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Picea engelmannii < 1.5 m	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	–(0)	–(0)	+(**)	–(0)	1(**)	–(0)
Pinus contorta > 1.5 m	3(13)	3(**)	2(**)	4(12)	6(13)	10(22)	+(1)	–(0)	2(4)	1(7)	3(2)	4(2)
Pinus contorta < 1.5 m	3(**)	–(0)	–(0)	1(**)	3(**)	7(1)	+(**)	–(0)	+(1)	1(**)	1(**)	4(**)
Populus tremuloides > 1.5 m	10(62)	10(55)	10(57)	10(56)	10(52)	10(51)	10(72)	10(80)	10(71)	10(73)	10(77)	10(66)
Populus tremuloides < 1.5 m	8(3)	10(4)	8(2)	9(4)	10(15)	7(8)	9(4)	10(4)	9(5)	10(6)	10(12)	10(7)
Pseudotsuga menziesii > 1.5 m	2(15)	3(10)	10(24)	10(16)	10(17)	1(**)	3(1)	8(2)	2(2)	2(1)	3(3)	4(1)
Pseudotsuga menziesii < 1.5 m	5(2)	3(**)	2(**)	9(1)	4(**)	1(**)	3(**)	3(**)	1(**)	1(**)	4(**)	2(**)
SHRUBS												
Acer glabrum	–(0)	–(0)	1(15)	–(0)	–(0)	–(0)	–(0)	–(0)	+(1)	2(2)	–(0)	–(0)
Acer grandidentatum	–(0)	–(0)	1(**)	3(**)	–(0)	–(0)	3(6)	1(3)	1(5)	–(0)	–(0)	1(**)
Amelanchier alnifolia	2(**)	7(1)	8(20)	6(3)	1(**)	6(6)	10(24)	10(12)	9(22)	9(19)	7(2)	7(3)
Artemisia tridentata	2(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	1(**)
Berberis repens	2(**)	3(**)	8(2)	1(10)	4(2)	1(**)	7(5)	6(4)	5(5)	6(3)	6(5)	4(2)
Ceanothus velutinus	–(0)	3(5)	1(**)	–(0)	–(0)	3(11)	2(**)	3(13)	1(1)	1(15)	1(8)	5(4)
Crataegus douglasii	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	1(19)	–(0)	1(2)	1(5)	–(0)	–(0)
Juniperus communis	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	+(3)	–(0)	–(0)	–(0)
Pachistima myrsinites	3(**)	7(9)	4(10)	3(2)	–(0)	2(18)	10(38)	3(2)	3(2)	2(1)	10(41)	10(36)
Physocarpus malvaceus	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(3)	1(3)	+(**)	–(0)	–(0)	–(0)
Prunus virginiana	–(0)	–(0)	7(33)	3(**)	–(0)	1(**)	7(17)	8(13)	7(20)	7(21)	–(0)	3(1)
Rubus parviflorus	–(0)	3(**)	–(0)	–(0)	–(0)	2(13)	–(0)	–(0)	–(0)	–(0)	1(10)	–(0)
Rosa woodsii	5(**)	7(**)	8(3)	9(2)	–(0)	4(5)	10(2)	10(5)	8(5)	8(8)	9(1)	6(1)
Salix scouleriana	2(**)	3(**)	4(6)	3(**)	–(0)	–(0)	2(1)	5(2)	+(2)	–(0)	1(**)	1(5)
Shepherdia canadensis	–(0)	–(0)	–(0)	3(1)	–(0)	–(0)	2(9)	–(0)	+(8)	–(0)	4(9)	5(9)
Sorbus scopulina	–(0)	7(**)	3(2)	–(0)	–(0)	1(1)	2(1)	1(**)	+(2)	1(3)	–(0)	2(1)
Spiraea betulifolia	–(0)	3(**)	4(10)	–(0)	–(0)	2(3)	2(16)	10(46)	+(4)	2(2)	–(0)	1(**)
Symphoricarpos albus	–(0)	–(0)	7(7)	4(18)	6(4)	4(6)	4(9)	10(15)	5(27)	4(3)	–(0)	–(0)
Symphoricarpos oreophilus	10(22)	7(3)	3(8)	6(27)	4(3)	4(16)	6(11)	–(0)	6(27)	5(2)	9(21)	9(17)
GRAMINOIDS												
Agropyron caninum	8(3)	3(5)	3(**)	4(1)	3(2)	2(3)	2(**)	–(0)	3(1)	4(3)	3(5)	7(1)
Agrostis spp.	–(0)	–(0)	1(**)	1(1)	–(0)	–(0)	–(0)	–(0)	+(3)	–(0)	–(0)	–(0)
Bromus carinatus	5(2)	3(2)	–(0)	3(10)	4(3)	2(5)	3(1)	–(0)	4(4)	3(2)	–(0)	5(4)
Bromus ciliatus	2(3)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(2)	1(**)	1(**)	1(**)
Bromus spp.	–(0)	–(0)	–(0)	1(3)	–(0)	–(0)	+(**)	1(3)	+(**)	1(**)	1(**)	–(0)
Calamagrostis rubescens	5(41)	3(**)	8(14)	10(30)	10(52)	10(43)	9(27)	10(14)	8(34)	10(35)	10(43)	5(5)
Carex aquatilis	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(20)	–(0)	–(0)	–(0)	–(0)	–(0)
Carex geyeri	3(7)	3(2)	2(10)	1(38)	6(13)	4(13)	3(34)	3(5)	2(12)	1(19)	1(38)	1(3)
Carex hoodii	2(**)	–(0)	–(0)	1(3)	–(0)	1(**)	+(**)	–(0)	3(2)	2(2)	–(0)	1(5)
Carex spp.	2(**)	–(0)	–(0)	3(**)	–(0)	–(0)	+(**)	–(0)	+(**)	–(0)	–(0)	3(1)
Dactylis glomerata	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Elymus glaucus	3(2)	3(8)	9(19)	8(12)	4(**)	6(8)	7(6)	8(9)	9(7)	9(13)	3(3)	6(6)

Code of constancy values: + = <5%, 1 = 5-15%, 2 = 15-25%, 3 = 25-35%, 4 = 35-45%, 5 = 45-55%, 6 = 55-65%, 7 = 65-75%, 8 = 75-85%, 9 = 85-95%, 10 = 95-100%

(con.)

Appendix A1. (con.)

Community Type:	POTR-ABLA/SYOR	POTR-ABLA/THFE	POTR-PSME/AMAL	POTR-PSME/SYOR	POTR-PSME/CARU	POTR-PICO/CARU	POTR/AMAL-PAMY	POTR/AMAL-SPBE	POTR/AMAL-SYOR	POTR/AMAL-CARU	POTR/PAMY-CARU	POTR/PAMY-GEVI
No. of stands:	6	3	9	8	7	10	25	8	53	20	7	17
Festuca idahoensis	–(0)	–(0)	–(0)	1(**)	1(**)	–(0)	–(0)	–(0)	+(**)	1(**)	–(0)	–(0)
Melica spectabilis	2(**)	–(0)	1(**)	4(**)	3(1)	2(**)	+(**)	1(**)	2(1)	2(**)	1(**)	1(**)
Phleum pratense	2(**)	–(0)	–(0)	1(**)	–(0)	1(**)	–(0)	–(0)	2(2)	–(0)	–(0)	–(0)
Poa palustris	2(**)	–(0)	–(0)	–(0)	1(**)	1(**)	+(**)	–(0)	1(**)	2(1)	–(0)	1(**)
Poa pratensis	5(1)	–(0)	1(**)	3(3)	3(2)	3(3)	2(3)	3(5)	5(14)	3(26)	3(3)	2(1)
Poa reflexa	2(**)	3(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	1(**)	1(**)
Poa spp.	–(0)	3(**)	–(0)	3(2)	–(0)	1(**)	1(2)	–(0)	1(5)	–(0)	1(3)	2(**)
Stipa occidentalis	2(**)	–(0)	1(**)	–(0)	1(**)	–(0)	+(**)	–(0)	1(4)	–(0)	–(0)	1(**)
FORBS												
Achillea millefolium	10(1)	3(**)	6(**)	10(2)	10(1)	5(3)	6(2)	3(2)	7(1)	6(2)	4(2)	5(1)
Agastache urticifolia	5(6)	7(**)	1(**)	4(1)	–(0)	–(0)	1(5)	3(**)	2(3)	3(4)	–(0)	2(1)
Agoseris glauca	2(**)	–(0)	–(0)	1(**)	1(**)	1(**)	+(**)	–(0)	1(**)	1(**)	1(**)	1(**)
Antennaria microphylla	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	4(**)	1(**)
Aquilegia coerulea	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(3)	–(0)
Arabis spp.	3(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	1(**)	1(**)
Arnica cordifolia	5(4)	7(3)	4(30)	5(9)	9(18)	4(9)	5(9)	1(**)	1(7)	3(11)	3(5)	6(9)
Artemisia ludoviciana	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(2)	1(**)	–(0)	–(0)
Aster perelegans	2(**)	–(0)	–(0)	1(**)	1(**)	–(0)	1(4)	–(0)	1(2)	1(**)	–(0)	–(0)
Aster engelmannii	–(0)	3(5)	7(8)	4(**)	–(0)	2(1)	4(6)	3(5)	2(3)	5(2)	4(2)	4(2)
Aster foliaceus	3(**)	–(0)	–(0)	–(0)	1(**)	2(4)	+(2)	5(1)	2(3)	2(1)	–(0)	1(**)
Aster integrifolius	–(0)	–(0)	–(0)	3(**)	–(0)	–(0)	–(0)	–(0)	1(1)	–(0)	–(0)	–(0)
Aster spp.	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	+(3)	1(**)	1(1)	1(2)	1(**)	1(**)
Astragalus miser	2(**)	–(0)	–(0)	–(0)	3(2)	–(0)	–(0)	–(0)	+(2)	1(3)	–(0)	1(**)
Balsamorhiza macrophylla	–(0)	–(0)	–(0)	–(0)	1(**)	1(20)	–(0)	–(0)	1(5)	1(**)	–(0)	2(**)
Campanula rotundifolia	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	2(**)	1(**)	+(**)	2(1)	–(0)	–(0)
Castilleja linariaefolia	–(0)	3(2)	1(**)	1(**)	4(**)	3(1)	2(**)	–(0)	2(**)	2(**)	3(**)	2(1)
Castilleja miniata	2(**)	–(0)	1(**)	3(2)	1(**)	–(0)	1(1)	–(0)	1(2)	–(0)	3(**)	–(0)
Clematis columbiana	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	1(**)	5(2)	1(**)	–(0)	–(0)	–(0)
Collinsia parviflora	2(**)	–(0)	1(**)	3(3)	1(3)	–(0)	+(3)	1(10)	2(4)	1(3)	–(0)	1(**)
Delphinium occidentale	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	+(**)	1(**)	2(2)	1(**)	–(0)	–(0)
Disporum trachycarpum	–(0)	–(0)	2(**)	–(0)	–(0)	–(0)	1(**)	3(1)	1(1)	1(1)	–(0)	–(0)
Epilobium angustifolium	–(0)	7(1)	4(1)	1(20)	3(**)	3(7)	5(2)	3(8)	2(2)	4(9)	4(1)	1(15)
Equisetum laevigatum	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(20)	–(0)	–(0)	–(0)	–(0)	–(0)
Erigeron speciosus	7(4)	3(15)	1(**)	3(2)	–(0)	1(10)	2(2)	3(**)	3(1)	1(**)	1(**)	1(**)
Fragaria vesca	7(6)	10(4)	7(2)	6(3)	9(2)	3(2)	3(2)	–(0)	3(2)	4(1)	1(38)	4(1)
Frasera speciosa	–(0)	–(0)	–(0)	3(2)	1(**)	2(2)	2(**)	–(0)	1(**)	1(1)	3(2)	1(3)
Galium boreale	2(**)	7(**)	1(**)	5(3)	1(2)	4(**)	2(1)	–(0)	3(2)	3(2)	1(3)	1(**)
Galium triflorum	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(4)	–(0)	+(5)	1(**)	–(0)	–(0)
Geranium richardsonii	–(0)	–(0)	–(0)	1(30)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Geranium viscosissimum	10(25)	10(11)	8(4)	10(24)	10(10)	10(14)	9(6)	8(8)	10(12)	10(10)	10(10)	9(16)
Habenaria unalascensis	7(**)	–(0)	2(**)	3(**)	–(0)	3(1)	3(**)	3(**)	3(**)	2(**)	–(0)	4(**)
Hackelia floribunda	2(**)	3(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	1(**)	–(0)	–(0)
Helenium hoopsii	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Helianthella uniflora	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	1(**)	2(1)	2(1)	–(0)	–(0)
Heracleum lanatum	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	1(**)	–(0)	–(0)
Hieracium albiflorum	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	2(1)	–(0)	+(**)	–(0)	–(0)	1(2)
Hieracium cynoglossoides	–(0)	–(0)	3(**)	4(**)	4(**)	2(2)	2(**)	1(**)	3(**)	2(**)	3(**)	1(**)
Iris missouriensis	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Lathyrus lanszwertii	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Ligusticum filicinum	–(0)	–(0)	–(0)	1(3)	–(0)	3(5)	+(**)	–(0)	2(7)	1(17)	–(0)	–(0)

(con.)

Appendix A1. (con.)

Community Type:	POTR-ABLA/SYOR	POTR-ABLA/THFE	POTR-PSME/AMAL	POTR-PSME/SYOR	POTR-PSME/CARU	POTR-PICO/CARU	POTR/AMAL-PAMY	POTR/AMAL-SPBE	POTR/AMAL-SYOR	POTR/AMAL-CARU	POTR/PAMY-CARU	POTR/PAMY-GEVI
No. of stands:	6	3	9	8	7	10	25	8	53	20	7	17
Lupinus argenteus	10(3)	7(**)	6(5)	9(5)	10(5)	7(4)	9(7)	9(4)	7(8)	9(9)	10(5)	5(5)
Nemophila breviflora	2(10)	–(0)	1(**)	3(15)	–(0)	–(0)	–(0)	–(0)	1(21)	–(0)	–(0)	–(0)
Osmorhiza chilensis	8(3)	10(9)	9(7)	10(5)	7(4)	8(3)	7(11)	8(5)	7(6)	7(10)	9(2)	7(3)
Osmorhiza occidentalis	7(2)	3(**)	2(2)	1(**)	–(0)	1(2)	2(1)	–(0)	3(5)	3(3)	–(0)	1(5)
Paeonia brownii	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(1)	1(**)	–(0)	–(0)
Pedicularis bracteosa	–(0)	–(0)	–(0)	3(**)	–(0)	4(2)	–(0)	1(**)	1(**)	1(3)	–(0)	–(0)
Pedicularis racemosa	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Perideridia gairdneri	–(0)	–(0)	3(**)	4(**)	7(1)	4(1)	3(**)	8(1)	5(**)	7(1)	1(**)	–(0)
Potentilla glandulosa	3(**)	3(**)	3(**)	4(**)	6(**)	4(1)	2(1)	–(0)	5(1)	3(1)	7(8)	6(2)
Potentilla gracilis	2(**)	–(0)	–(0)	1(3)	–(0)	2(1)	1(2)	–(0)	2(1)	1(5)	1(**)	–(0)
Pteridium aquilinum	–(0)	–(0)	1(35)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Rudbeckia occidentalis	2(2)	7(5)	–(0)	3(21)	–(0)	1(15)	+(3)	–(0)	2(11)	2(12)	–(0)	–(0)
Scrophularia lanceolata	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Senecio crassulus	2(10)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)	1(**)	1(10)	–(0)	–(0)
Senecio streptanthifolius	5(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	1(**)	1(**)	1(**)	2(**)
Senecio integerrimus	2(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(3)	1(4)	–(0)	–(0)
Senecio serra	5(**)	7(**)	–(0)	–(0)	–(0)	1(5)	+(**)	4(1)	3(5)	3(7)	–(0)	1(3)
Silene menziesii	2(**)	–(0)	2(**)	1(**)	–(0)	–(0)	2(3)	–(0)	1(1)	1(2)	3(2)	1(**)
Smilacina racemosa	2(**)	–(0)	2(**)	1(**)	3(**)	–(0)	4(1)	8(1)	2(3)	3(3)	–(0)	1(**)
Smilacina stellata	–(0)	–(0)	7(1)	1(**)	1(**)	2(3)	2(2)	8(2)	3(1)	3(3)	4(1)	1(**)
Solidago canadensis	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Stellaria jamesiana	2(**)	–(0)	–(0)	1(3)	–(0)	1(**)	+(3)	–(0)	+(2)	1(**)	–(0)	3(3)
Taraxacum officinale	8(2)	7(1)	3(**)	5(1)	6(2)	4(1)	5(2)	3(**)	7(2)	6(2)	4(2)	2(**)
Thalictrum fendleri	5(9)	10(15)	10(19)	10(11)	10(13)	7(7)	9(7)	10(13)	7(12)	8(14)	4(1)	5(5)
Tragopogon dubius	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	2(**)	1(**)	–(0)
Trifolium dubium	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Trifolium repens	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Trifolium spp.	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(5)	–(0)	+(3)	–(0)	–(0)	–(0)
Valeriana occidentalis	2(**)	3(**)	2(**)	5(8)	–(0)	1(**)	+(5)	1(**)	3(3)	3(5)	1(**)	2(4)
Vicia americana	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Viola adunca	2(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	1(**)	1(**)	3(**)	–(0)
Viola nuttallii	3(**)	–(0)	–(0)	–(0)	–(0)	1(**)	+(**)	–(0)	1(1)	2(**)	–(0)	1(**)
Viola spp.	2(**)	3(10)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(2)	1(**)	–(0)	–(0)
Wyethia amplexicaulis	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	1(**)	–(0)	–(0)	1(**)

Code of constancy values: + = < 5%, 1 = 5-15%, 2 = 15-25%, 3 = 25-35%, 4 = 35-45%, 5 = 45-55%, 6 = 55-65%, 7 = 65-75%, 8 = 75-85%, 9 = 85-95%, 10 = 95-100%

APPENDIX A2

Appendix A2. Constancy and average canopy cover (latter in parenthesis) of important plants in aspen community types within the Caribou and Targhee National Forests. (Code for constancy values is at the bottom of the table; canopy cover is the average percent for those stands in which the species was found, except "**" denotes a trace value.)

Community Type:	POTR/ SPBE-CARU	POTR/ SYOR-CARU	POTR/ SYOR-POPR	POTR/ SYOR-RUOC	POTR/ ARTR-FEID	POTR/ GEVI	POTR/ WYAM	POTR/ CARU	POTR/ CARU-POPR	POTR/ POPR	POTR/ RUOC
No. of stands:	3	42	15	8	2	5	7	35	13	12	4
TREES											
Abies lasiocarpa > 1.5 m tall	–(0)	1(1)	2(2)	–(0)	–(0)	2(2)	1(**)	1(4)	1(**)	2(8)	5(8)
Abies lasiocarpa < 1.5 m tall	–(0)	1(**)	1(1)	1(1)	–(0)	2(**)	1(**)	1(**)	1(**)	3(2)	10(**)
Juniperus scopulorum > 1.5 m	–(0)	1(2)	–(0)	1(**)	–(0)	–(0)	1(1)	+(**)	–(0)	–(0)	–(0)
Juniperus scopulorum < 1.5 m	3(**)	1(**)	1(**)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Picea engelmannii > 1.5 m	–(0)	+(7)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Picea engelmannii < 1.5 m	–(0)	+(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Pinus contorta > 1.5 m	–(0)	3(3)	2(2)	–(0)	–(0)	–(0)	3(**)	2(1)	1(**)	1(**)	–(0)
Pinus contorta < 1.5 m	–(0)	2(**)	1(**)	1(**)	–(0)	–(0)	1(**)	2(**)	1(**)	1(**)	–(0)
Populus tremuloides > 1.5 m	10(80)	10(76)	10(76)	10(68)	10(70)	10(65)	10(74)	10(79)	10(80)	10(77)	10(76)
Populus tremuloides < 1.5 m	7(5)	10(7)	10(5)	10(2)	10(43)	10(4)	9(2)	10(6)	10(7)	10(6)	10(2)
Pseudotsuga menziesii > 1.5 m	3(**)	2(3)	1(3)	4(3)	5(**)	4(3)	3(1)	4(3)	1(**)	3(3)	–(0)
Pseudotsuga menziesii < 1.5 m	7(**)	3(1)	3(1)	1(**)	5(**)	2(**)	1(**)	3(**)	3(1)	1(**)	–(0)
SHRUBS											
Acer glabrum	–(0)	–(0)	1(**)	–(0)	–(0)	2(5)	–(0)	–(0)	–(0)	–(0)	–(0)
Acer grandidentatum	–(0)	–(0)	1(3)	1(**)	–(0)	–(0)	1(**)	+(**)	–(0)	–(0)	–(0)
Amelanchier alnifolia	7(**)	7(2)	5(1)	6(1)	–(0)	4(3)	6(2)	4(1)	2(1)	3(2)	5(4)
Artemisia tridentata	–(0)	+(**)	1(**)	1(**)	10(5)	2(**)	1(**)	1(1)	2(**)	–(0)	3(**)
Berberis repens	10(6)	6(2)	3(1)	4(1)	5(5)	–(0)	1(**)	4(2)	4(5)	3(2)	–(0)
Ceanothus velutinus	7(2)	+(13)	–(0)	–(0)	–(0)	–(0)	–(0)	+(8)	–(0)	1(**)	–(0)
Crataegus douglasii	–(0)	1(1)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Juniperus communis	–(0)	+(6)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)
Pachistima myrsinites	—(0)	2(1)	2(3)	–(0)	–(0)	2(2)	–(0)	1(**)	–(0)	1(2)	–(0)
Physocarpus malvaceus	–(0)	+(9)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Prunus virginiana	10(3)	3(1)	1(7)	4(**)	–(0)	–(0)	–(0)	1(1)	1(3)	–(0)	5(2)
Rubus parviflorus	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Rosa woodsii	7(**)	6(3)	5(10)	4(13)	5(**)	4(5)	3(**)	3(1)	5(1)	5(1)	5(**)
Salix scouleriana	3(**)	1(2)	–(0)	1(**)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)
Shepherdia canadensis	–(0)	+(**)	1(2)	–(0)	–(0)	–(0)	1(4)	1(6)	1(**)	1(20)	–(0)
Sorbus scopulina	–(0)	+(2)	–(0)	1(**)	–(0)	–(0)	–(0)	1(4)	–(0)	–(0)	–(0)
Spiraea betulifolia	10(31)	1(2)	–(0)	–(0)	–(0)	–(0)	–(0)	+(2)	–(0)	–(0)	–(0)
Symphoricarpos albus	10(27)	5(27)	2(20)	1(38)	–(0)	–(0)	–(0)	1(4)	2(2)	2(2)	–(0)
Symphoricarpos oreophilus	–(0)	5(18)	9(22)	9(24)	–(0)	6(6)	6(1)	8(2)	4(2)	6(1)	10(1)
GRAMINOIDS											
Agropyron caninum	–(0)	5(1)	7(3)	4(25)	5(**)	2(3)	3(3)	5(2)	8(1)	5(4)	5(5)
Agrostis spp.	–(0)	+(5)	–(0)	–(0)	–(0)	4(25)	1(**)	+(**)	2(**)	–(0)	3(**)
Bromus carinatus	–(0)	3(1)	6(5)	8(10)	–(0)	4(10)	6(2)	5(2)	5(1)	2(8)	5(3)
Bromus ciliatus	–(0)	1(2)	1(3)	–(0)	–(0)	–(0)	–(0)	1(1)	2(**)	3(1)	3(3)
Bromus spp.	–(0)	1(2)	1(**)	–(0)	–(0)	–(0)	–(0)	+(**)	2(**)	2(**)	3(10)
Calamagrostis rubescens	10(37)	10(44)	3(6)	–(0)	–(0)	4(4)	3(13)	10(48)	10(42)	2(3)	–(0)
Carex aquatilis	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Carex geyeri	–(0)	2(35)	3(1)	–(0)	–(0)	–(0)	1(20)	2(37)	1(10)	1(**)	–(0)
Carex hoodii	3(**)	1(1)	3(2)	5(2)	–(0)	–(0)	3(**)	1(2)	2(1)	3(10)	–(0)
Carex spp.	–(0)	+(**)	–(0)	–(0)	5(**)	2(**)	1(**)	–(0)	–(0)	–(0)	3(**)
Dactylis glomerata	–(0)	1(2)	–(0)	3(**)	–(0)	–(0)	3(2)	+(**)	2(**)	–(0)	3(**)
Elymus glaucus	10(1)	7(10)	5(5)	5(24)	–(0)	6(17)	4(9)	5(12)	2(10)	5(18)	8(6)
Festuca idahoensis	–(0)	+(**)	2(**)	–(0)	10(30)	–(0)	4(1)	2(1)	1(3)	–(0)	–(0)
Melica spectabilis	–(0)	2(**)	1(**)	4(**)	–(0)	4(**)	1(**)	1(**)	2(**)	3(**)	5(**)
Phleum pratense	–(0)	1(1)	1(**)	1(40)	–(0)	2(**)	4(2)	2(1)	4(7)	2(5)	–(0)

(con.)

Appendix A2. (con.)

Community Type:	POTR/ SPBE-CARU	POTR/ SYOR-CARU	POTR/ SYOR-POPR	POTR/ SYOR-RUOC	POTR/ ARTR-FEID	POTR/ GEVI	POTR/ WYAM	POTR/ CARU	POTR/ CARU-POPR	POTR/ POPR	POTR/ RUOC
No. of stands:	3	42	15	8	2	5	7	35	13	12	4
Poa palustris	–(0)	1(1)	1(75)	–(0)	–(0)	–(0)	3(3)	2(11)	2(**)	1(3)	–(0)
Poa pratensis	3(2)	5(17)	9(40)	8(11)	5(10)	4(2)	9(12)	5(6)	10(32)	10(49)	–(0)
Poa reflexa	–(0)	–(0)	–(0)	1(3)	–(0)	–(0)	–(0)	+(**)	–(0)	2(3)	3(3)
Poa spp.	–(0)	+(**)	–(0)	–(0)	5(5)	–(0)	1(**)	1(16)	–(0)	–(0)	5(**)
Stipa occidentalis	–(0)	2(1)	3(**)	–(0)	10(8)	2(5)	1(2)	2(2)	4(1)	3(1)	3(**)
FORBS											
Achillea millefolium	7(**)	8(2)	6(1)	9(3)	5(3)	4(**)	6(**)	8(1)	8(1)	8(**)	5(2)
Agastache urticifolia	3(**)	2(1)	3(2)	6(7)	–(0)	4(1)	–(0)	+(**)	–(0)	1(10)	8(7)
Agoseris glauca	3(**)	1(**)	–(0)	1(**)	–(0)	2(**)	–(0)	1(**)	1(**)	2(**)	–(0)
Antennaria microphylla	–(0)	–(0)	2(**)	–(0)	5(**)	–(0)	1(**)	1(2)	4(1)	1(**)	–(0)
Aquilegia coerulea	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	2(9)	3(**)
Arabis spp.	3(**)	+(**)	1(**)	1(**)	–(0)	2(**)	–(0)	–(0)	1(**)	–(0)	3(**)
Arnica cordifolia	–(0)	3(7)	1(4)	–(0)	–(0)	2(20)	–(0)	3(9)	2(3)	3(17)	–(0)
Artemisia ludoviciana	–(0)	+(3)	1(**)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	1(**)	–(0)
Aster perelegans	3(3)	1(3)	1(**)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)
Aster engelmannii	–(0)	1(1)	–(0)	–(0)	–(0)	4(3)	–(0)	3(3)	–(0)	–(0)	5(2)
Aster foliaceus	3(**)	2(2)	–(0)	3(12)	–(0)	2(**)	–(0)	1(1)	4(1)	1(**)	–(0)
Aster integrifolius	–(0)	1(4)	–(0)	–(0)	–(0)	2(**)	1(**)	+(3)	–(0)	2(**)	–(0)
Aster spp.	–(0)	2(1)	2(**)	–(0)	–(0)	–(0)	–(0)	1(1)	2(**)	1(**)	–(0)
Astragalus miser	–(0)	1(4)	3(1)	–(0)	–(0)	–(0)	1(3)	3(4)	3(1)	2(**)	–(0)
Balsamorhiza macrophylla	–(0)	+(**)	–(0)	–(0)	–(0)	2(3)	4(2)	+(**)	–(0)	1(**)	3(**)
Campanula rotundifolia	–(0)	2(**)	1(**)	1(**)	–(0)	–(0)	–(0)	1(**)	2(**)	–(0)	–(0)
Castilleja linariaefolia	–(0)	1(**)	–(0)	1(**)	–(0)	2(**)	–(0)	1(1)	1(10)	–(0)	–(0)
Castilleja miniata	–(0)	1(1)	1(**)	–(0)	–(0)	–(0)	–(0)	1(**)	1(**)	–(0)	–(0)
Clematis columbiana	–(0)	1(4)	1(**)	–(10)	–(0)	–(0)	–(0)	+(**)	–(0)	–(0)	–(0)
Collinsia parviflora	–(0)	1(9)	1(10)	4(20)	–(0)	–(0)	1(**)	1(**)	1(3)	2(2)	3(**)
Delphinium occidentale	–(0)	1(1)	1(2)	4(**)	–(0)	–(0)	1(**)	1(**)	–(0)	1(**)	3(10)
Disporum trachycarpum	–(0)	+(**)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	1(**)	–(0)	–(0)
Epilobium angustifolium	3(1)	3(10)	–(0)	–(0)	–(0)	4(8)	–(0)	1(**)	–(0)	1(3)	3(**)
Equisetum laevigatum	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)
Erigeron speciosus	–(0)	4(2)	3(3)	4(1)	–(0)	2(5)	3(1)	+(**)	1(**)	1(2)	–(0)
Fragaria vesca	–(0)	5(2)	6(3)	6(1)	5(15)	2(**)	3(4)	5(4)	5(3)	5(4)	5(19)
Frasera speciosa	–(0)	1(2)	2(**)	–(0)	–(0)	–(0)	1(**)	2(1)	2(**)	1(2)	3(**)
Galium boreale	–(0)	4(2)	2(1)	4(1)	–(0)	4(3)	1(**)	2(1)	4(1)	3(1)	3(**)
Galium triflorum	–(0)	+(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(2)	–(0)	–(0)	–(0)
Geranium richardsonii	–(0)	–(0)	–(0)	1(20)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	3(7)
Geranium viscosissimum	7(6)	10(14)	10(14)	4(9)	10(3)	10(20)	10(9)	10(12)	9(10)	8(13)	10(2)
Habenaria unalascensis	–(0)	1(**)	1(**)	–(0)	–(0)	–(0)	4(**)	1(1)	2(**)	1(**)	5(**)
Hackelia floribunda	–(0)	1(2)	1(**)	5(4)	–(0)	4(2)	–(0)	1(1)	–(0)	–(0)	5(**)
Helenium hoopsii	–(0)	–(0)	1(**)	1(5)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Helianthella uniflora	–(0)	1(3)	–(0)	–(0)	–(0)	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)
Heracleum lanatum	—(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	5(13)
Hieracium albiflorum	–(0)	+(**)	1(**)	–(0)	–(0)	2(**)	–(0)	1(**)	–(0)	–(0)	–(0)
Hieracium cynoglossoides	7(**)	3(**)	1(**)	–(0)	5(**)	–(0)	–(0)	2(**)	2(**)	–(0)	–(0)
Iris missouriensis	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	2(2)	1(**)	–(0)
Lathyrus lanszwertii	–(0)	–(0)	–(0)	3(19)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Ligusticum filicinum	–(0)	+(**)	–(0)	–(0)	–(0)	–(0)	3(5)	1(19)	–(0)	–(0)	8(27)
Lupinus argenteus	7(6)	8(7)	8(8)	5(**)	10(4)	4(23)	3(10)	9(9)	6(7)	7(5)	5(**)
Nemophila breviflora	–(0)	1(21)	1(**)	5(66)	–(0)	2(20)	–(0)	+(3)	1(3)	1(20)	5(3)
Osmorhiza chilensis	7(2)	7(6)	6(5)	6(7)	–(0)	8(16)	3(4)	7(4)	6(3)	7(3)	8(2)

Code of constancy values: + = <5%, 1 = 5-15%, 2 = 15-25%, 3 = 25-35%, 4 = 35-45%, 5 = 45-55%, 6 = 55-65%, 7 = 65-75%, 8 = 75-85%, 9 = 85-95%, 10 = 95-100%

(con.)

Appendix A2. (con.)

Community Type:	POTR/ SPBE-CARU	POTR/ SYOR-CARU	POTR/ SYOR-POPR	POTR/ SYOR-RUOC	POTR/ ARTR-FEID	POTR/ GEVI	POTR/ WYAM	POTR/ CARU	POTR/ CARU-POPR	POTR/ POPR	POTR/ RUOC
No. of stands:	3	42	15	8	2	5	7	35	13	12	4
Osmorhiza occidentalis	–(0)	1(8)	2(1)	3(3)	–(0)	4(4)	3(13)	1(1)	–(0)	2(3)	5(7)
Paeonia brownii	–(0)	+(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Pedicularis bracteosa	–(0)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(1)	–(0)	1(**)	3(**)
Pedicularis racemosa	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	5(**)
Perideridia gairdneri	7(**)	5(1)	3(1)	–(0)	5(**)	4(**)	4(**)	5(1)	8(1)	6(1)	–(0)
Potentilla glandulosa	3(**)	5(1)	5(**)	1(3)	5(5)	6(2)	1(1)	6(1)	7(1)	6(**)	3(**)
Potentilla gracilis	–(0)	1(2)	3(5)	4(1)	–(0)	6(**)	3(**)	3(2)	4(4)	5(1)	3(**)
Pteridium aquilinum	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	+(5)	–(0)	–(0)	–(0)
Rudbeckia occidentalis	–(0)	2(5)	3(1)	10(34)	–(0)	4(2)	4(8)	1(3)	2(8)	3(11)	10(29)
Scrophularia lanceolata	–(0)	–(0)	1(**)	4(**)	–(0)	2(**)	–(0)	–(0)	–(0)	–(0)	–(0)
Senecio crassulus	–(0)	+(5)	1(10)	–(0)	–(0)	2(**)	–(0)	1(1)	1(3)	2(2)	3(3)
Senecio streptanthifolius	–(0)	+(**)	2(**)	1(**)	–(0)	–(0)	–(0)	1(**)	–(0)	2(**)	3(**)
Senecio integerrimus	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	1(5)	–(0)	1(**)	–(0)	–(0)
Senecio serra	–(0)	2(2)	3(2)	8(10)	–(0)	4(1)	1(**)	1(**)	1(**)	3(**)	3(20)
Silene menziesii	3(3)	1(1)	1(3)	1(3)	–(0)	–(0)	–(0)	2(1)	–(0)	–(0)	3(3)
Smilacina racemosa	7(2)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(**)	2(**)	–(0)	–(0)
Smilacina stellata	7(1)	3(2)	1(3)	1(**)	–(0)	2(**)	–(0)	3(2)	2(**)	2(**)	–(0)
Solidago canadensis	–(0)	1(2)	–(0)	–(0)	–(0)	–(0)	–(0)	+(**)	–(0)	1(10)	–(0)
Stellaria jamesiana	–(0)	1(2)	–(0)	5(5)	–(0)	2(3)	–(0)	1(**)	–(0)	–(0)	8(2)
Taraxacum officinale	3(**)	7(2)	7(3)	4(2)	5(15)	2(1)	4(7)	6(2)	8(3)	8(4)	10(1)
Thalictrum fendleri	10(12)	5(10)	4(4)	8(4)	–(0)	8(9)	1(**)	7(8)	5(2)	6(5)	10(12)
Tragopogon dubius	–(0)	1(**)	1(2)	1(**)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Trifolium dubium	–(0)	+(3)	1(**)	1(**)	–(0)	–(0)	–(0)	–(0)	2(**)	–(0)	–(0)
Trifolium repens	–(0)	+(**)	–(0)	–(0)	–(0)	–(0)	–(0)	1(4)	–(0)	–(0)	–(0)
Trifolium spp.	–(0)	–(0)	1(3)	–(0)	–(0)	–(0)	–(0)	+(**)	1(**)	1(5)	–(0)
Valeriana occidentalis	–(0)	3(3)	3(9)	8(6)	–(0)	4(8)	–(0)	2(4)	2(3)	5(4)	5(5)
Vicia americana	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)	–(0)
Viola adunca	–(0)	1(**)	1(**)	3(**)	–(0)	–(0)	–(0)	1(1)	2(**)	1(**)	3(**)
Viola nuttallii	–(0)	+(**)	–(0)	–(0)	–(0)	2(**)	–(0)	2(1)	–(0)	2(**)	5(**)
Viola spp.	–(0)	+(**)	1(**)	1(3)	–(0)	–(0)	–(0)	1(1)	–(0)	–(0)	–(0)
Wyethia amplexicaulis	–(0)	+(**)	–(0)	–(0)	–(0)	2(**)	10(48)	+(**)	–(0)	1(**)	–(0)

Code of constancy values: + = < 5%, 1 = 5-15%, 2 = 15-25%, 3 = 25-35%, 4 = 35-45%, 5 = 45-55%, 6 = 55-65%, 7 = 65-75%, 8 = 75-85%, 9 = 85-95%, 10 = 95-100%

APPENDIX B1

Means, standard errors (SE), and ranges of basal area, stand age, stand height, and site index for *Populus tremuloides* by community types in English units.

Community type	Basal area	Stand age	Stand height	Site index (at 80 years)
	Ft^2/acre	*Years*	*Feet*	
POTR-ABLA/SYOR (2)[1]				
mean	111	91	58	54
SE	37	3	8	8
range	73-150	88-94	49-66	45-62
POTR-PSME/AMAL (2)				
mean	152	88	50	53
SE	5	24	0	5
range	147-157	63-112	50-50	48-58
POTR-PSME/SYOR (3)				
mean	162	95	60	55
SE	37	1	5	8
range	114-236	94-96	49-65	46-60
POTR-PSME/CARU (1)				
mean	154	97	62	56
SE	—	—	—	—
range	—	—	—	—
POTR-PICO/CARU (1)				
mean	182	115	87	72
SE	—	—	—	—
range	—	—	—	—
POTR/AMAL-PAMY (12)				
mean	123	90	51	55
SE	7	6	3	3
range	77-165	47-107	35-67	38-71
POTR/AMAL-SPBE (3)				
mean	128	94	63	60
SE	16	6	2	5
range	95-144	83-100	60-65	53-70
POTR/AMAL-SYOR (20)				
mean	105	91	48	49
SE	6	4	2	2
range	36-158	53-125	33-67	36-65
POTR/AMAL-CARU (5)				
mean	141	72	45	49
SE	17	6	3	3
range	83-186	52-87	35-53	40-56
POTR/PAMY-CARU (3)				
mean	145	96	54	50
SE	4	10	8	6
range	136-150	78-112	39-68	40-60
POTR/PAMY-GEVI (2)				
mean	129	98	49	47
SE	0	2	1	1
range	129-129	96-100	48-50	46-48
POTR/SPBE-CARU (1)				
mean	160	106	53	46
SE	—	—	—	—
range	—	—	—	—
POTR/SYOR-CARU (17)				
mean	138	85	52	51
SE	9	4	2	2
range	86-206	53-107	32-68	35-66
POTR/SYOR-POPR (5)				
mean	154	79	50	56
SE	14	8	2	4
range	112-187	49-94	47-57	45-65
POTR/SYOR-RUOC (5)				
mean	139	96	57	55
SE	15	9	4	6
range	109-194	64-119	46-68	43-77
POTR/GEVI (1)				
mean	164	120	65	52
SE	—	—	—	—
range	—	—	—	—
POTR/WYAM (2)				
mean	74	71	27	31
SE	38	8	3	4
range	36-112	63-79	24-30	27-35
POTR/CARU (12)				
mean	144	93	55	54
SE	9	3	3	2
range	61-185	75-112	38-69	40-65
POTR/CARU-POPR (5)				
mean	149	88	49	47
SE	12	8	8	5
range	113-182	67-114	33-75	37-65
POTR/POPR (4)				
mean	220	95	63	62
SE	26	10	1	5
range	168-280	67-110	60-66	51-72
POTR/RUOC (3)				
mean	106	97	55	54
SE	4	4	3	3
range	101-115	93-105	51-61	48-57
All intensively sampled stands (114)				
mean	135	90	52	52
SE	4	2	1	1
range	36-280	52-125	24-87	27-77

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[1] Number of stands sampled.

APPENDIX B2

Means, standard errors (SE), and ranges of basal area, stand age, stand height, and site index for *Populus tremuloides* by community types in metric units.

APPENDIX B2 (CON.)

Community type	Basal area	Stand age	Stand height	Site index (at 80 years)
	m²/ha	*Years*	*-------- Meters*	*--------*
POTR-ABLA/SYOR (2)[1]				
mean	25.5	91	17.7	16.5
SE	8.5	3	2.4	2.4
range	16.8-34.4	88-94	14.9-20.1	13.7-18.9
POTR-PSME/AMAL (2)				
mean	35.0	88	15.3	16.2
SE	1.1	24	0	1.5
range	33.8-36.0	63-112	15.3-15.3	14.6-17.7
POTR-PSME/SYOR (3)				
mean	37.2	95	18.3	16.8
SE	8.5	1	1.5	2.4
range	26.2-54.2	94-96	14.9-19.8	14.0-18.3
POTR-PSME/CARU (1)				
mean	35.4	97	18.9	17.1
SE	—	—	—	—
range	—	—	—	—
POTR-PICO/CARU (1)				
mean	41.8	115	26.5	21.9
SE	—	—	—	—
range	—	—	—	—
POTR/AMAL-PAMY (12)				
mean	28.2	90	15.5	16.8
SE	1.6	6	0.9	0.9
range	17.7-37.9	47-107	10.7-20.4	11.6-21.6
POTR/AMAL-SPBE (3)				
mean	29.4	94	19.2	18.3
SE	3.7	6	0.6	1.5
range	21.8-33.1	83-100	18.3-19.8	16.2-21.3
POTR/AMAL-SYOR (20)				
mean	24.1	91	14.6	14.9
SE	1.4	4	0.6	0.6
range	8.3-36.3	53-125	10.0-20.4	11.0-19.8
POTR/AMAL-CARU (5)				
mean	32.4	72	13.7	14.9
SE	3.9	6	0.9	0.9
range	19.1-42.7	52-87	10.7-16.2	12.2-17.1
POTR/PAMY-CARU (3)				
mean	33.3	96	16.6	15.2
SE	0.9	10	2.4	1.8
range	31.2-34.4	78-112	11.9-20.7	12.2-18.3
POTR/PAMY-GEVI (2)				
mean	29.6	98	14.9	14.3
SE	0.0	2	0.3	0.3
range	29.6-29.6	96-100	14.6-15.2	14.0-14.6
POTR/SPBE-CARU (1)				
mean	36.7	106	16.2	14.0
SE	—	—	—	—
range	—	—	—	—
POTR/SYOR-CARU (17)				
mean	31.7	85	15.8	15.5
SE	2.1	4	0.6	0.6
range	19.7-47.3	53-107	9.8-20.7	10.7-20.1
POTR/SYOR-POPR (5)				
mean	35.4	79	15.2	17.1
SE	3.2	8	0.6	1.2
range	25.7-42.9	49-94	14.3-17.4	13.7-19.8
POTR/SYOR-RUOC (5)				
mean	31.9	96	17.4	16.8
SE	3.4	9	1.2	1.8
range	25.0-44.5	64-119	14.0-20.7	13.1-23.5
POTR/GEVI (1)				
mean	37.7	120	19.8	15.8
SE	—	—	—	—
range	—	—	—	—
POTR/WYAM (2)				
mean	17.0	71	8.2	9.4
SE	8.7	8	0.9	1.2
range	8.3-25.7	63-79	7.3-9.1	8.2-10.7
POTR/CARU (12)				
mean	33.1	93	16.8	16.4
SE	2.1	3	0.9	0.6
range	14.0-42.5	75-112	11.6-21.0	12.2-19.8
POTR/CARU-POPR (5)				
mean	34.2	88	14.9	14.3
SE	2.8	8	2.4	1.5
range	25.9-41.8	67-114	10.1-22.9	11.3-19.8
POTR/POPR (4)				
mean	50.5	95	19.2	18.9
SE	6.0	10	0.3	1.5
range	38.6-64.3	67-110	18.3-20.1	15.5-21.9
POTR/RUOC (3)				
mean	24.3	97	16.8	16.5
SE	0.9	4	0.9	0.9
range	23.2-26.4	93-105	15.5-18.6	14.6-17.4
All intensively sampled stands (114)				
mean	31.0	90	15.8	15.8
SE	0.9	2	0.3	0.3
range	8.3-64.3	52-125	7.3-26.5	8.2-23.5

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[1] Number of stands sampled.

APPENDIX C

Means, standard errors (SE), and ranges of total dry undergrowth production, composition by vegetation classes, and suitability of the undergrowth as livestock forage

Community type	N[1]	Total production		Composition			N[2]	Forage suitability		
				Shrubs	Forbs	Graminoids		Desirable	Intermediate	Least
				(Percent of total production)				(Percent of total canopy-cover)		
		Lb/acre	*Kg/ha*							
POTR-ABLA/SYOR	2						6			
mean		402	(451)	14	67	19		54	42	4
SE		92	(103)	6	2	4		—	—	—
range		310-494	(348-554)	7-20	65-70	15-23		—	—	—
POTR-ABLA/THFE	0						3			
mean		—	—	—	—	—		53	47	0
SE		—	—	—	—	—		—	—	—
range		—	—	—	—	—		—	—	—
POTR-PSME/AMAL	2						9			
mean		1,079	(1 210)	35	47	18		50	40	8
SE		307	(344)	15	17	2		—	—	—
range		772-1,386	(865-1 554)	20-50	30-65	15-20		—	—	—
POTR-PSME/SYOR	3						8			
mean		934	(1 047)	3	53	44		54	36	10
SE		218	(244)	1	15	15		—	—	—
range		558-1,313	(626-1 472)	1-5	25-74	25-73		—	—	—
POTR-PSME/CARU	1						7			
mean		498	(558)	1	35	64		62	37	1
SE		—	—	—	—	—		—	—	—
range		—	—	—	—	—		—	—	—
POTR-PICO/CARU	1						10			
mean		707	(793)	1	25	74		73	26	1
SE		—	—	—	—	—		—	—	—
range		—	—	—	—	—		—	—	—
POTR/AMAL-PAMY	12						25			
mean		846	(948)	40	31	29		56	37	7
SE		98	(110)	4	3	4		—	—	—
range		337-1,430	(378-1 603)	15-65	20-50	10-65		—	—	—
POTR/AMAL-SPBE	3						8			
mean		1,008	(1 130)	58	25	17		48	51	1
SE		146	(164)	17	6	12		—	—	—
range		821-1,296	(920-1 453)	25-80	15-35	5-40		—	—	—
POTR/AMAL-SYOR	20						53			
mean		979	(1 097)	16	42	42		56	41	3
SE		75	(84)	2	3	4		—	—	—
range		244-1,517	(274-1 701)	3-40	17-80	8-75		—	—	—
POTR/AMAL-CARU	5						20			
mean		1,035	(1 160)	7	42	51		57	41	2
SE		109	(122)	3	3	4		—	—	—
range		738-1,333	(827-1 494)	1-15	38-52	40-60		—	—	—
POTR/PAMY-CARU	3						7			
mean		639	(716)	20	37	43		56	34	10
SE		43	(48)	9	6	6		—	—	—
range		591-724	(663-812)	5-35	25-45	35-55		—	—	—
POTR/PAMY-GEVI	2						17			
mean		508	(569)	21	65	14		51	39	10
SE		47	(53)	4	10	6		—	—	—
range		461-556	(517-623)	17-25	55-75	8-20		—	—	—

Appendix C (con.)

Community type	N[1]	Total production		Composition			N[2]	Forage suitability		
				Shrubs	Forbs	Graminoids		Desirable	Intermediate	Least
				(Percent of total production)				(Percent of total canopy-cover)		
		Lb/acre	*Kg/ha*							
POTR/SPBE-CARU	1						3			
mean		847	(949)	25	35	40		53	45	2
SE		—	—	—	—	—		—	—	—
range		—	—	—	—	—		—	—	—
POTR/SYOR-CARU	17						42			
mean		1,138	(1 276)	6	49	45		60	37	3
SE		126	(141)	1	4	4		—	—	—
range		468-2,047	(525-2 295)	1-15	28-85	10-70		—	—	—
POTR/SYOR-POPR	5						15			
mean		914	(1 025)	5	45	50		41	57	2
SE		103	(115)	1	8	8		—	—	—
range		704-1,288	(789-1 444)	1-8	17-63	30-80		—	—	—
POTR/SYOR-RUOC	5						8			
mean		1,248	(1 399)	8	71	21		30	38	32
SE		230	(258)	6	9	5		—	—	—
range		753-2,035	(844-2 281)	1-30	40-90	8-33		—	—	—
POTR/ARTR-FEID	0						2			
mean		—	—	—	—	—		47	53	0
SE		—	—	—	—	—		—	—	—
range		—	—	—	—	—		—	—	—
POTR/GEVI	1						5			
mean		797	(893)	1	74	25		47	48	5
SE		—	—	—	—	—		—	—	—
range		—	—	—	—	—		—	—	—
POTR/WYAM	2						7			
mean		1,169	(1 310)	1	90	9		30	33	37
SE		121	(136)	0	6	6		—	—	—
range		1,048-1,289	(1 175-1 445)	1-1	84-95	4-15		—	—	—
POTR/CARU	12						35			
mean		867	(972)	2	33	65		70	30	0
SE		70	(78)	1	6	6		—	—	—
range		469-1,270	(526-1 424)	0-10	4-74	25-95		—	—	—
POTR/CARU-POPR	5						13			
mean		768	(861)	2	42	56		55	44	1
SE		139	(156)	1	9	8		—	—	—
range		446-1,228	(500-1 377)	1-5	20-74	25-75		—	—	—
POTR/POPR	4						12			
mean		859	(963)	1	38	61		33	64	3
SE		81	(91)	0	6	6		—	—	—
range		649-1,023	(728-1 147)	1-1	25-54	45-74		—	—	—
POTR/RUOC	3						4			
mean		794	(890)	2	81	17		48	35	17
SE		218	(244)	1	4	4		—	—	—
range		482-1,214	(540-1 361)	1-3	75-90	8-22		—	—	—
All stands	114									
mean		937	(1 050)	13	45	42				
SE		34	(38)	2	2	2				
range		244-2,047	(274-2 295)	0-80	4-95	3-95				

[1] Number of intensively sampled stands used to compute production.

[2] Total number of stands used to determine forage suitability.

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Mueggler, Walter F.; Campbell, Robert B., Jr. Aspen community types on the Caribou and Targhee National Forests in southeastern Idaho. Res. Pap. INT-294. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station; 1982. 32 p.

A system is presented for classifying aspen-dominated vegetational communities on the Caribou and Targhee National Forests in southeastern Idaho. A diagnostic key utilizing indicator plant species is provided for field identification of 23 community types. Tables are provided for detailed comparison of vegetational composition, productivity, and probable successional status.

KEYWORDS: aspen forests, community types, vegetation classification, Idaho

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